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THE EARLY YEARS OF A ZOÖLOGIST

BY HARRIS HAWTHORNE WILDER

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The Early Years of a Zoölogist

THE STORY OF A NEW ENGLAND BOYHOOD

By Harris Hawthorne Wilder

Edited and Arranged by

INEZ WHIPPLE WILDER

PRIVATELY PRINTED

Smith College, Northampton, Massachusetts

1930

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TO THE MEMORY OF
SOLON AND SARAH WILDER

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"Our dear Heavenly Father, I want a human skeleton very much and I want the Holy Spirit too whenever I am big enough to have them and when you think it is best.

"Bless our all the large animals such as elephants, cows, bulls, and heifers. Bless our all the small animals too, both male and female, and when I kill animals with my gun let them die quick so it won't hurt them . . . and bless our all our friends wherever they may be and give me wisdom so I may know about all the wonderful things you have made. Amen."

From a prayer made by Harris Hawthorne Wilder at about the age of six and recorded by his mother.

FOREWORD

THE idea of recording some of the recollections of his early youth first suggested itself to the author of this work upon the perusal of the delightful "Jugenderinnerungen" of his old friend and teacher, Professor Robert Wiedersheim of the University of Freiburg in Baden. A first draft of this autobiographical sketch was thus written and laid aside some four years ago. During the last few weeks previous to the author's sudden death, he had been filling in the details of this first draft as they had occurred to him, and a few days before his death he had given the entire manuscript into my hands to arrange and edit for him. The work thus entrusted to me has been in the truest sense a labor of love.

Undoubtedly, if the author had lived, he would have filled in many more details, a number of which he had, in fact, already related to me. A few of these I have introduced in brackets into the text in as nearly his own words as it is possible for me to recall them.

These sketches were written by the author wholly from memory without recourse to the notes, letters, or diaries which, preserved by a devoted mother, had come down from his childhood. These he had not seen for many years, and our last association together in connection with this work was a brief preliminary looking-over of this material, which he had planned to use as a collateral source of data. I have therefore added here and there, as footnotes, a few of his mother's memoranda of these early days. Of these the most significant, to my mind, was the prayer which, as the keynote of a life of extraordinary singleness of purpose, I have placed at the beginning of the book.

In addition to the diaries there has come down from the author's boyhood a large amount of other material, scientific notebooks kept

with marvelous attention to detail and arrangement, poems dealing mainly either with love or with philosophic thought, often fantastic or humorously morbid in character. Especially interesting are the many letters written him by his young friends, particularly the "boarder boys" of his narrative, since they give evidence of a continuous and virile scientific interest in the whole group, in spite of frequent lapses into discussion of more ordinary worldly matters, including affairs of the heart. The author's own voluminous correspondence with his mother and aunt during his four years at Amherst College afford in themselves an extremely lively account of the career of a college boy in the '80's.

To many these pages will portray the same gay, generous, lighthearted, serious-minded, somewhat erratic personality that they have long known and loved, a striking demonstration that the child is indeed the father of the man. It is hoped, however, that even to those who have never thus known him, the story of the spontaneous development of an alert little naturalist in a typical New England environment will be found interesting if only for the intimate picture which it gives of life, half a century ago, in a country town of Massachusetts, as seen through the eyes of a small boy. Possibly, also, other small boys may be indirectly benefited by the wise example given here of a father, who, finding that his son had interests and ambitions wholly different from his own, managed in his all too short association with his child to give him so full a measure of sympathy and aid. Certain it is that the untiring efforts of an understanding mother, early left to bear alone the responsibility for the rearing of the young naturalist, will be an inspiration to many another mother in an age when the close companionship between parent and offspring threatens to go out of fashion.

Sharing, as I do, my husband's deep sense of gratitude to these wise parents for their devotion and understanding, I have had no

hesitation in dedicating this book, as I am sure he himself would have done, to their memory.

I wish here to express my gratitude to the many friends who have encouraged and aided me in the completion of this work. Particularly I desire to thank our friend and colleague, Professor Robert Withington, of the Department of English of Smith College, for much practical advice and assistance.

INEZ WHIPPLE WILDER

Northampton, Massachusetts
September 5, 1928

CHRONOLOGY OF

IMPORTANT PRELIMINARY EVENTS

April 8, 1830: Marriage of Ivory Wilder and Louisa Wilson (Princeton).

December 20, 1830: Birth of Solon Wilder, my father.

August 17, 1832: Birth of Sarah (Sally) Watkins Smith, my mother (Princeton), Daughter of Dr. Chandler Smith and Asenath Kendall Babcock, of Princeton.

September 13, 1855: Marriage of Solon Wilder and Sarah Smith, at Vernon, N. Y.

THE EARLY YEARS OF A ZOÖLOGIST

I

Earliest Experiences

I WAS born in Bangor, Maine, at 104 Essex Street, on the 7th of April, 1864,[1] but removed in a few weeks to a house on the other side of the Kenduskeag Stream, just below the Bangor Theological Seminary, where my parents made friends of the theological students.

My father, who, before his marriage, had settled at Athol, Massachusetts, as chorister and teacher of vocal music, had taken a position in Bangor, Maine, as Chorister of the French Street Congregational Church, Dr. Field's; he also gave vocal lessons, and conducted juvenile and other concerts.

Naturally my father found a number of the theological students who could sing, and these became my "uncles." I had other "uncles" also, from among the veterans of the Civil War, during which my birth occurred. These friends of my father referred to me as "the young Hallelujah" and later this name became "Hallie" and still later "Hal." The reason why my father's friends referred to me as "the young Hallelujah" was because he was a musical director, and was especially fond of Händel's Hallelujah Chorus. Soon it became so much my name that my parents thought that I must be named

[1] In *The Book of the Wilders,* the date of my birth is given incorrectly as March, 1857.

some name that could be called "Hal." At first I was called "Harold," but just then President Lincoln was assassinated, and one of the men who were thought to be the conspirators was named "Herold" and my great-grandmother would not allow her great-grandchild to be called a name that sounded like that of one of the men who had murdered the beloved President, and thus that name was dropped. When I had been called Hallie so long, and when my great-grandmother objected to the name of Harold, and my parents needed to find some name for me that could be called Hal, they thought of Dr. Harris, then a professor in the Bangor Theological Seminary, and later President of Bowdoin, and they named me Harris after him. As they felt that I needed a second name, which was then quite popular, my mother added the name Hawthorne as a good euphonious name to go with Harris. I found out later that Nathaniel Hawthorne died at about that time, and as it was undoubtedly in the papers, probably my mother was thus directed, although, when in later years I asked her about it, she denied it, and said that she did not call me Hawthorne for Nathaniel, but merely because she liked the name. Yet I think that she saw that name in the papers at the time and that she probably had forgotten why she had selected it. Of course, I would have taken some other name than Harris, either Thomas, or John, as they were common names in the Wilder family. The first Wilder known in my genealogical history was named Nicholas. Roger Wilder, who came over in the *Mayflower,* may have been a relative. Both were good names, but I had to use a name that was given me at first as a pleasantry, and have had always to be called that.

The house to which we moved was called "Cedar Cottage," and there I lived for some three years, associating with my "uncles." My theological "uncles," whom I especially remember, were Charlie Pope, Thomas Babb, and Justin Moore. The first of these, "Uncle"

Charlie Pope, settled in California, but afterwards came back to the East, where he became noted as a genealogist, the author of the well known "Pioneers of Massachusetts."

I also had a number of pseudo-aunts, among them "Aunt" Annie Jewett, long a librarian in Bangor, and "Aunt" Helen Sanders, who married Isaac Currier and lived on Ohio Street until her death some fifteen years ago.

Our landlord was a Mr. Mills who lived nearby. Other neighbors were Judge Appleton; Mr. Dodd, a bank cashier; Hannibal Hamlin, Vice-President with Abraham Lincoln. The Appletons had several sons in the Civil War, one of whom was Colonel John Appleton, an "uncle" whom I especially remember, who used to take me to walk to see the "funny window" (probably a lunette in a gable). Another family was the Godfrey family, with four daughters: Ella, Ada, Hattie, Lottie. The last two used to take me to ride in my baby carriage, and to walk. I remember that my little neighbor, Frank Hamlin, came over to see me one day. He had long white hair, and it occurred to me what fun it would be to put my fingers in this, but in doing so, I overbalanced myself and rolled over on my back. I shall always remember how my fist looked, as I saw it from below, with wisps of Frankie's white hair clutched in my hand, also how he screamed. Perhaps this indicated that I favored the Secession, since Frankie was the Vice-President's son, associated with Abraham Lincoln. Mrs. Hamlin used to come over to my mother's and cry for fear that her husband would be assassinated, as many letters threatened. Hannibal Hamlin was very dark in skin and hair, and many Southerners thought that he had Negro blood, but his little son's hair was light enough I am sure, because I tested it. My friend, Miss Grace Carter, who had known Frank Hamlin, when I told her of my pulling out his hair, said, "You couldn't pull it now," and stated that he was bald.

By my second summer, we went down to Princeton, Massachusetts, to visit my grandfather and grandmother, who lived on the Common, opposite Gregory's store; and after this we went to Princeton every summer for several years until we moved there in 1872 because of my father's failing health.

Thus I early remember two homes, one for the winters, Bangor, and one for summers, Princeton. We came down from Bangor by a steamer; then from Boston by train to either Oakdale, or "Pratt's Junction" in Sterling, and reached Princeton by a stage. The one from Oakdale was of a red-brown color; that from Pratt's Junction was bright yellow. Either distance was seven miles, and each stage held about nine inside, and four to six on the top. As I got older, I enjoyed the top the best, but under my mother's charge I took the inside. These old stages were naturally drawn by horses, and we made very pleasant acquaintances. I well remember some people from Lynn, the Pendletons,[2] whom we saw afterwards in Lynn. Going back and forth in the stage, we had a chance to meet our friends. For instance, my grandmother and an early friend once met unexpectedly and said, "Why, Betsy Babcock!" and "Why, Louisa Wilson!" calling each other by their names as girls. Aunt Betsy was our old friend and my mother's relative from Lexington, the wife of Joseph Davis, and she was coming to see us. My childish mind

[2] This is probably a slip of memory as to the name. From his mother's notes I find the following:

When he was three years old we rode up to Princeton with a Mrs. Perington of Lynn. He asked her how old her little girl was, who was with her, and she said, "My *little* girl is a big girl, I think." "Well, perhaps God will make you another little girl." She asked him to come to see her some time. He said, "I don't know where you live and I don't know your name." She handed him a card. "Oh, Mama," said he, "here's a ticket to take us right to the lady's house." Then he looked out of the stage window and, seeing stone walls, said, "See that procession of stones." —To the little girl, who was twelve years old, he said, "Do not fall, little dear— But never fear, I won't let you" and put his arm around her.—*Editor.*

never could understand how our neighbors, the Davis girls, could know her, too, and could also be relatives of hers.

The first year that I knew about was 1867, and I got this from reading it on a bound volume of "The Nursery," of which I had four annual volumes, beginning with this year. I think I was in Princeton when I discovered this year, but from this I began to understand that years were numbered, and that times and dates were known and marked by that means.

My experiences with Cedar Cottage were the usual ones of a child under three, and ended when we came to Boston and Cambridge. Concerning this transition, I remember that I was appalled and badly frightened by seeing a burly old Irishman come into my sitting-room, the place where I lived, and kneel down and start to take the carpet up. I sprang upon the sofa and began to yell, most excitedly, "No, no tate 'e' tarpey up," but the giant only laughed, and didn't stop. This I did not understand for no one had explained to me about what he was to do. At last my mother entered and told me what was going to happen.

I left Bangor at the age of three and a half and came to Boston, where my father took a position as Chorister of the Shepard Memorial Church in Cambridge (Dr. Alexander MacKenzie's). For about a year, we lived near Aunt Fanny's (Grandmother Wilder's sister) in South Boston, not far from the "Blind Asylum" (Perkins Institute), but later we moved out to Cambridge, and occupied for about four years a house owned by Gardiner Green Hubbard, at 20 Lowell Street. This house connected with his through a foot-path across a pasture, which I often took to play with "Bertie" and Grace Hubbard. Their sister, May, later Mrs. Alexander Graham Bell, was a little older, perhaps twelve to fifteen, and was considered much too old to play with us. I well remember Mrs. Hubbard, the mother of the two younger children, and a second wife; also her father, Mr.

MacCurdy, with teeth all built up with gold, which gave him a bright golden gleam when he smiled, which was frequently.

Once when I went to the Hubbards' to dinner, Mrs. Hubbard asked me if I would take some "dessert," accenting the first syllable. This meant to me only much sand, with camels here and there, and I said, "No," but that I would like some of "that pudding."

Our other neighbors whom I remember were the Farleys, who lived the next door below us, with several older daughters; the two Misses Bent, the sisters-in-law of Samuel Scudder, who lived at the corner; the Rices, who lived on the opposite corner, with the grandchildren, George and Fanny, and the son, Edmund (later Colonel Edmund Rice in the Spanish-American War). These were probably my near relatives, although we did not know it, as I am descended from Edmund and Tamazine Rice in at least four lines. I remember particularly well Professor Eben N. Horsford, with his two young daughters, Cornelia (Nellie) and Lillian. Professor Horsford lent me books on anatomy and zoölogy, and I would come home with my arms full. I was delighted with one particular picture, and showed it to my mother; "Oh, see here, mother, here is a picture of an "aldoot [adult] frog!"

I remember, in Cambridge houses, a lot of old-fashioned rooms, containing some curious things, chess men carved out of ivory, and wallpaper showing landscapes. Once, when calling, I saw a globe of the world and said, "I espy a globe of the world. May I go and look at it?"

My father taught in the Boston Conservatory of Music on the Common on Tremont Street, in addition to his work as chorister and organist at the Shepard Memorial Church. He also gave private lessons in singing on Tremont Street near the Conservatory. Thus my father went to the city of Boston every day, and my mother and I would go in the horse-car every few days. In the car, I met many

interesting people with whom I scraped acquaintance.[3] I well remember Longfellow, who lived near us, and who used to put his feet down into the straw that was put on the floor during cold weather, to keep warm with, for, of course, there was no artificial heat in the cars in those days. Longfellow, I remember, did not get acquainted with me, but his brother, Samuel, also something of a poet, liked children and would always get acquainted with them. In the spring, he would often carry a rose, which he would give to a child with whom he talked.

My Aunt Lizzie Skinner was my mother's sister, Eliza Gardner Smith (Mrs. Frank Skinner). As a young widow she lived with us in Cambridge, and was my "second mother." She had many friends who took a great interest in me and contributed much to my happiness in one way or another. [In the case of one, however, I managed early to "kill the goose that laid the golden egg." I liked this lady very much because she always brought me peppermints. One day I chanced to hear my mother and aunt discussing her and to my childish mind this was rank treason. So the next time she came to lunch with us I took occasion to remark at the table, "Mother, I don't see what you don't like about Miss Fannie Robinson." Although neither my mother nor my aunt had really said anything which would have been in the least offensive, the matter could never be explained, and so far as I remember Miss Robinson never came to the house again. Perhaps, though, she forgave me in the end, for only a few years ago when she was over eighty, she took pains to

[3] A somewhat amusing incident connected with the horse-car trips to Boston was related to me by "Aunt" Helen (Mrs. Currier) a few years ago. She was visiting the Wilders in Cambridge and took the small boy with her to Boston one day. On the car a man began to talk to Hal, opening the conversation with the question, "Where did you get your red curls, little girl? Your mother hasn't got them." To which Hal replied with great dignity, "That isn't my mother, it's my aunt. My curls aren't yed, they're yawburn. God gave them to me. Didn't you know?"—*Editor.*

call upon me in my laboratory as she was passing through Northampton.]

My Aunt Lizzie was a great influence with me in all things artistic, and taught me to use a pencil, colored pencils, and brushes with water-colors. Her home instruction, with no formal teaching, enabled me to make the drawings for my Doctor's thesis, and make the drawings for my other scientific papers and books, at least those not actually taken from other works. This began with my copying her when she painted leaves and flowers to use in the decoration of china, an art of which she was very fond. Soon she gave me the small pans of water colors, beyond those she needed, and sometimes those she did, and showed me how to shade, and how to avoid allowing too sharp edges to dry; also if dry or too sharp, how to soften with the use of water. These things are very simple to speak of, but contribute a very great deal to skill in drawing and painting. It was with my aunt that I found Frederic Hollick's book, which first gave me some knowledge of Anatomy. She frequently took me to the Agassiz Museum, which was near our home, and when I saw the skeleton of the Megatherium, it used so to move me that I told my mother that it made my heart shake. I have never got over this effect, produced by large creatures in a Museum, and still remember an awful experience I had many years later in the original Agassiz Museum, at Neuchatel in Switzerland. I wanted to see some salamanders there, and for this I had to go out over a long series of cases that had no railing. Right in the middle, I looked down and saw huge cases with elephants, and this sight gave me such a turn that I very nearly fell, and had to come back.

I think I must always have been a very imaginative and emotional child. My earliest fright had occurred in Cedar Cottage, Bangor, when I was looking over an old bound volume of "Godey's Lady's Book" for 1851. I saw a picture of a woman's dress waist, and

began to cry and yelled out, "Boken Yady, Boken Yady." My mother had to get for me one of her waists, and put it on the bed, explaining that the picture represented one of the waists like that, after which I became calm and satisfied with her explanation. My next great scare was in Cambridge, when I was perhaps five years old. I was lying, attempting to go to sleep, when suddenly I thought of a story which the Hubbard girls had been reading to me in the afternoon, "Beauty and the Beast." I thought of the Beast and became terrified. I called down to my parents and said that I was afraid of the Beast. My parents tried to comfort me and finally had to bring me down to the parlor, but even then I was badly frightened. I called to my father, "Pray to God, Papa, that the Beast does not get me." My father thought that I had been reading "A Midsummer-Night's Dream," and as this play was to be in Boston soon, my father planned to take my mother and myself to it, as an explanation of the Beast, shown by Bottom the Weaver. This was not the same thing, but I saw in this a very funny comedy, with lovely fairies in tights, covered with spangles that shone when they moved. I was so much enthralled by this that I resolved to give the play in George Rice's barn, and selected the part of Puck to be taken by myself. This part I actually learned although I did not understand it, and years afterward, when Smith College gave it, I could repeat long passages to Pauline Mark, who took the part of Puck.

While writing about somewhat pathological matters, I may speak of a serious fall from a piano-stool, upon which I was standing, to the floor, when I struck my forehead against the moulding of the room. Of course I cried, but my mother was surprised that I didn't seem to mind it much, and the place where I struck did not swell. The next day, I seemed very quarrelsome and would go up to my family and strike them with my fist, although I had not been such a child before; but that night my mother heard something gurgling in

my throat, and raised me up, when blood poured from my mouth and both nostrils. My father ran for a doctor, while my mother tried to stop it with towels. She finally drenched seven towels before it stopped, and saw in the morning that I had changed from a fat child to a thin one but that I was no longer quarrelsome, and my skin showed large blotches that looked like freckles. The doctor said that if I hadn't had the hemorrhage, I would have had congestion of the brain. After this I had frequent nosebleeds, at times severe but never like the first, and I got over being frightened by them so that, when I got one many years later in the street-car in Worcester, and badly frightened the conductor who tried to help me out, I treated it as a good joke.

While we were living in Cambridge, the great military funeral of Anson Burlingame took place. The procession passed up Brattle Street on its way to Mt. Auburn, and I watched it from the window, as I was not allowed to go out. After this, I played Burlingame's funeral with my little lead soldiers.

I remember also that one fall, when we came back from Princeton, we found the trees uprooted, and our tin gutter pipe blown off from the house. This was the result of the "Great September Gale" (of 1871, I think). It did not strike Princeton.

[After we had been away from Bangor for a year or so my parents took me back there on a visit, and incidentally, I suppose, to show off their offspring. I remember that we were invited to a great many places to supper, and I think some of my remarks must have caused some embarrassment both to my mother and to our hosts. Once I took a dislike to some feature of the house, possibly low-studded rooms with exposed beams such as I took great pains to build into my own house in Northampton later on in life! On this occasion I said, when we were asked to come to the dining room to supper, "I do not care to eat anything in this house." My father's

attitude of utter indifference in the matter was the best remedy, however, and after having remained alone for a few minutes I capitulated and came out to the dining room ready to eat. Upon another occasion I remarked upon coming to the table, "Salmon again! We have salmon everywhere we go." This was true because it was the season of fresh salmon and our hostesses were trying to give us a great delicacy.]

I had never been to school until I was seven years old, but then my parents sent me to a private school, three houses away, on Lowell Street, kept by a Miss Delano. After I came to Smith College, I was speaking one day to Miss Grace Chester (Mrs. George Gow), teacher in Botany, and she said that when she studied in Cambridge, she used to live on Lowell Street. I asked her where on Lowell Street, for I said that I used to live there. She replied that she boarded with a Miss Delano, and described the house. I found then that this was the same Miss Delano who used to keep a school there and to whom I went. I asked her if Miss Delano wasn't very old, and she answered, "Not very old, I should say that she was fifty." So Miss Delano must have been about twenty-five when I knew her, and I thought her then a very old lady!

The very first day at my first lesson, Miss Delano asked us all, "If one bat has two ears, how many ears have two bats?" but nobody could tell. Even the pictures of two bats on the blackboard, with needlessly long ears, failed to throw any light on the vexed question, and we all flunked. We stood along a crack on the floor, and as I was new, coming the second day, the teacher put me at the bottom of the row, next to Bessie Hinckley.

It was during this school term that I took the measles and it went right through the school, and we all expected it. There were no precautions taken, of course, as it was considered incident to childhood. We were all very proud when we had had it and were out

again. There were two children, Edith and Eddie, who introduced me to the school, and they were the first that had it. I do not remember their last names.

[I had heard that other children were very cross when they had measles and I made a resolution that I would not be. The result was that I was so abnormally good that my parents were really alarmed and thought I must be very ill indeed, until finally the strength of my resolution gave out and I was as cross as a child ought to be under the circumstances.]

I imagine I was in Miss Delano's School from September to the following spring, when this school career was interrupted by my going up to Princeton. I remember ox-eye daisies in the school yard, and I remember also the Christmas decoration of the school rooms. This surprised me very much, coming to school and seeing evergreens and colored Bible texts among them. We were told that we could select from all the Bible texts the one we wanted and I took "Put on the Whole Armour of God," because it had something about armour in it, and it appealed to me as being very brave. I lived in Cambridge about four years; then came up to Princeton to live when my father's health failed. He gave up his work as chorister, and his private pupils in Boston, and thought that he could carry on his Musical Convention work, as it was now so well established; this would well support us, and he could have his headquarters as well at Princeton as elsewhere. I think he made this change in the spring of 1872, as I remember a spring term in Princeton, taught by Olive Davis, Samuel Davis's daughter, which was when I first came up.

As I remember, I left Bangor when I was three and a half years old, stayed about a year in South Boston, about four years in Cambridge. This would make me eight years old when I went up to Princeton to live, and this is as I remember it. All my summers,

from the time I was two years old, I had spent in Princeton at the old Wilder house on the Common, and thus the change was not great, at least for the first year.

II

Western Trip

THE first noteworthy event which I remember after coming to Princeton was my Western trip.

In the fall of 1871, my father had been on Convention business out West through Ohio and Minnesota, and I followed his trip on the railroad map with a pin. I became much interested in the West by this means, and when my father came back he told my mother that the next time he went he would take us, too. This was realized, and I well remember the bustle when one morning in Princeton I was awakened and by lamplight saw my parents busily talking and packing things into cases so as to get an early start, and it seemed to me astonishing to get up so early. At first, I remember riding far beyond Worcester, and I became much interested in the names painted on the engines, and tried to make a list of those that I saw. We first went to Titusville, Pennsylvania, where my father gave a festival. We landed just when a large wooden hotel was burning. I think it was the Cabot House, but I am not quite sure. We went to Mr. Delos O. Wickham's house, where we stayed several days, but it seemed to me then many months. There everybody was excited over oil and I saw nothing but derricks everywhere. I heard that if a man "struck oil" another might find it nearby in any direction, or might not find any, after digging and spending much. My father's friend, Mr. Blake, was one of the successful ones, and I spent many hours standing in Mr. Wickham's yard, with a "drill" made of a piece of wood with the end wedge-shaped; and I would strike it in the earth, and turn it around, and then smell of it, and

get much excited over the smell of kerosene, which was everywhere in the earth. Mr. Rockefeller, who no doubt smelled the same smell, was more successful even than I, but I collected specimens of the rocks for my museum! I played mostly with Annie Wickham; also with a nice boy next door. We were interested also in the approaching presidential election, Grant and Wilson vs. Greeley and Brown, with torchlight processions. The boy next to Mr. Wickham's was a Democrat, and said to me: "Greeley and Brown," while I yelled "Grant and Wilson." We settled it finally by rolling on the grass, each trying to stop the other fellow. I remember that it was very friendly, for I liked this boy very much. When we went on with our journey, there were still torchlight processions and wax figures. We had a man in our party who looked very much like General Grant, and when he stood around with a cigar in his mouth, the result was striking.

At one of the concerts at Titusville, my father sang a duet "The Siren and Friar" with a beautiful young person named Emma Bettis, who begged and implored my father to go down " 'neath the bounding sea" with her but my father wouldn't, and I thought he was a fool not to, when she wanted him so badly, for I would have if I had had such a chance! Afterwards I met this enslaver and asked to call. She graciously allowed me to, but when I went, I was much chagrined because she took me in her lap and treated me like what I was, a little boy of eight. A man was there, and he laughed at me; I was going to kill him when I grew up! I think he was engaged to her. When I got home I found the music among my father's things and used to sing it with much sentiment. Years later, I met Miss Ida Tarbell, who was a friend of the former Miss Bettis and had just said goodbye to her in the New York station, and she said that she was not surprised at my early sentiment.

From Titusville, we went up to Minneapolis, where we stopped

at the Nichollet House; I presume it was then the best hotel there, for I know my father's habits. I remember that there was the stuffed head of a bison, or, as it was then called, a "buffalo." There was a barber's shop just across the street from the hotel, and, as I needed a hair-cut, I was allowed to go alone. The barbers were Negroes and I talked with them. They asked me where I came from and when I said "Boston," it produced a profound impression. The barber who put me up on a hassock that he first put in his chair, said to the other barber, "Here's a little Bosting boy," which made me so proud that when I rose to go, I stood up very straight, and walked out like a general.

I was still subject to "scares," and when I landed in Minneapolis I got much frightened again by thinking about the Devil, but later became so much interested in the talk which two men gave of a small skirmish with Indians, that I forgot all about the Devil. I am still very imaginative and lay it to my Keltic temperament, for my head index is about 82, and I have Irish ancestors in my mother's family, the Smiths. When I was somewhat older, and lived in Princeton, my mother got me the best book a boy ever had, the *Märchen* by the Brothers Grimm, but, of course, in English. My mother knew that I was imaginative, so I was allowed to read only three stories a day, which, being obedient, I did faithfully. Even in this, I contracted a habit that bothered me for years. I found out that the number three was the magic number, and was used in countless ways. If I happened to touch a thing once, I had to touch it three times or else it wouldn't be right; it was best of all, as it satisfied my feelings of symmetry, to touch a thing first with one hand, then with the other, and lastly with both. My grandmother Wilder, who never knew of this habit of mine, once told me that, when she was a little girl going to school, if she thought that she had not touched a stone a certain way, she would have to go back and touch it again, no matter how far she had to go. This makes me think that

I would not have had to go back so far as my maternal Irish ancestors for the explanation of my strange ideas.

I have one further confession to make, and that is that I had developed slight habit spasms, consisting of twitching my eyelids or even closing them tightly; and at this particular time when we took our Western trip, I got into the habit of grunting audibly, just making a vocal sound, pausing, and then grunting again. My poor mother was much ashamed of me at this new and audible mark of what she called my nervousness, but I am inclined to think now that all such manifestations might have been helped by the application of a slipper!

While in Minneapolis, we visited Minnehaha Falls, and saw a little tame bear, which lived in a log. We saw also the Falls of St. Anthony, of course. We went out on the prairie to a pioneer place, Cottage Grove; riding over the prairie in the wind, my father took a severe cold. We went out to see some old Bangor friends, named Furber. While out there, I collected many agates and carnelians for my museum.

After Minneapolis, we went down through Burlington, Iowa, to Hannibal, Missouri, where we visited our old Bangor friends, the Godfreys, with Hattie and Lottie, my old associates. Here I visited the cave made famous by Mark Twain in "Tom Sawyer," and collected crystals of limestone, and other mineral specimens. We went in about half a mile and I was allowed to carry a candle, which made a great hit with me. I knew there Dr. Birch, the "Doctor" of "Innocents Abroad," an old friend and associate of Mark Twain's. He vaccinated me twice, but it didn't "take." I went to a pork-packing establishment with my father, and saw pigs stuck, one a minute. After this, I used to play pork-packing with peanuts, the little single kind. This could be made very realistic, even to the splitting of the two halves. I had to put in the squeal myself!

While in Hannibal, there came the news of the great Boston Fire, and we came home immediately. My father and I went all about among the ruins, and got absolutely lost amid the desolation. We saw fires still in the cellars and basements, as the workmen were removing the débris. While in Chicago, I had studied the ruins of Chicago, burnt only a year earlier, and identified certain of the well-known ones, which I had seen in the illustrated papers the year before. Among these was that of the old Michigan Central Station on Lake Street, which was still there years afterward when I came to Chicago to teach (1886-89), as the railroad awaited the result of the long law-suit about the lake shore front. A wooden interior had been built in the old ruins, and here I welcomed my mother in December, 1886, when she came out to live with me in my newly established home.

III

Family Matters in Princeton

IN the spring of 1873, my cousin Florence Marguerite was born in the old Princeton house. I had spent the day at the Gregorys', across the Common, as the girls had come for me.[4] I often went over for a few hours, but for them to invite me, and for a whole day, too, was something very surprising. When I came back in the evening, Uncle Dan was sitting beside the bed, and he showed me a little squirming pink thing, and said, "Well, Hal, how do you like your new cousin?" After this I used to bring flowers gathered on my way home from school, mainly in Sewell Myrick's pasture, for my aunt and cousin.

The engagement of Mr. Davis (Uncle Dan) to my aunt must have been along the winter and spring of the previous year, 1872, when I first came up to Princeton to live. I remember that Mr. Davis used to bring *Harper's Weekly* every week when he came to see Aunt Abbie (and *me,* as I fondly thought), and was nice enough to explain all the cartoons of Thomas Nast on the Tammany Ring. I always looked on, and got to recognize Boss Tweed, Oakey Hall, Sweeney, and the rest.

Uncle Dan had come to Cambridge, when Aunt Abbie was visiting us, earlier in the season, and I used to call him "Electricity

[4] In a letter written two days later to his father, who was away from home, the event is heralded as follows:

"We have had a baby and it weighs eight pounds it has light hair and light complextion.

Aunt Abbie has had A chill and is now sweting. When the baby was born I spent the day at Mr. Gregorys."—*Editor.*

Davis," which I intended as a title of great respect. He brought me a little toy house which used to be blown up by rubbing a piece of flannel on a piece of tissue paper. The wedding may have been in the summer of 1872. Harry Myrick and I tended door, with white suits, and huge bouquets on in front. My father made the coffee, as he was celebrated for its manufacture; and when he announced, "Positively the last appearance of Abbie Wilder," I wept aloud.

During both winters in Princeton, 1872-73 and 1873-74, my father collected a local quartette, and they practised at our house. He played violin, and they got up some fine little concerts. Ellen Gregory (West) and Nellie Whitaker (Goodnow) were sopranos. Mr. Charles Whitaker was tenor, and I think my grandfather was tenor the first winter. Aunt Abbie was usually the alto, and my father was always bass. In the spring of 1874, he visibly failed, and finally became weaker, and died on the 6th of April, the day of my cousin Kirk's birthday, and the day before mine.

My father, as I remember him, had always a severe cough, and I felt that it was a sign of being grown up to cough, so that when I had a bad cold and cough, I felt that I, too, was grown up. This was called bronchitis, but not that most deadly of all illnesses, tuberculosis. At that time, little was known about this; for even the germ was not known, and there was no known connection between this and scrofula. And no consumptive was ever sent to places out-of-doors, especially in the winter, which was then considered no less than suicide. My father's cough was thought to be the result of two "lung-fevers," the effect of the cold Bangor winters. This cough gradually got worse until finally he would come home from his Conventions with a lot of nostrums given him by his friends, or recommended by them. At last, the symptoms got so serious that even the members of his family realized that he was very sick, and I knew that he carried about a spittoon to expectorate into. One

morning, he said to my mother that it seemed to him that his strong lungs had been taken away, and that someone had put a pair of little weak ones in their place. One night, when he went up to bed, he walked very slowly, a step at a time, and soon after I was sent for by my mother, who said that my father wanted to see me, but that I was not to cry or make any disturbance. I was then put to bed in my grandmother's bed, and then, a little later, my mother came in to say that my poor father was dead. She cried like a little child, and then came the strange scenes following a death. There came to the funeral the entire Worcester Choral Union, which my father had directed for four years, and they sang my father's "Rock of Ages," a responsive double chorus, his best-known work. Had he lived, he would doubtless have composed much more. When he died, he was writing a fugue.

He had planned to send me in to Worcester to take violin lessons. I fear that I would not have accomplished very much, for my whole interest was in other lines, and yet I feel that had my father only lived, he would soon have seen that my soul was elsewhere. On the other hand, my cousin, Rebecca,[5] the daughter of his sister, Eliza, or Aunt "Lizzie," as we called her, went to Germany to study violin, and was taken by the great violinist, Joseph Joachim, who took only the ones he wanted from the pupils in the "Königliche Hochschule für Musik" . . . I well remember how much my father wanted me to be musical, but didn't find me so. Once he was playing the Overture to Wagner's *Tannhäuser,* then just out in America, and I sang a note that happened to chord with what he was playing. He was delighted, and then asked me if I could do it again. He changed the key and struck some other chords, to give me a new set of tones, and then gave something else. I remember how embarrassed I was and

[5] Professor Rebecca Wilder Holmes of the Department of Music, Smith College.

how carefully I tried, but all to no purpose. I was not musical, but I am sure that he would have seen that I was something else.

When my poor father realized that he was seriously sick, and that he would leave very little money for his wife and child, he tried his best to get more by conducting Festivals, as he had been doing in the past. His last Festival was at Warren, Massachusetts, at which he looked so sick that a man who saw him when he got out of the car said that he should never have come, and he conducted his choruses seated. When he died, he left to my mother only his life insurance of $3,000 cut down to $2,800 and four $100 shares of stock in the Mason and Hamlin Organ Company. My mother put the insurance money into the savings bank, from which she got the interest twice a year. This alone could not have supported us, but my grandparents divided their house very favorably for us and charged very little rent, and also gave us garden produce, and a quart of milk every day. As Princeton was a fine boarding town, and as we lived next to the Wachusett House, and across the Common from the Prospect House, we could and did rent our rooms during the summer, while my mother slept on the sofa in our sitting room. My mother and I took care of the rooms, and this gave us some money. I remember that our big room could be rented for as much as nine dollars a week, and our other large front room rented for seven dollars, and this sum seemed very large to us. We bought most of our food over at Gregory's store, and got our meat from a meat cart that came once or twice a week. I remember that we could get an "Aitch bone," which gave us several meals, a steak, an Irish stew, and a soup. Rarely we could get a hen or a chicken which we had for celebrations, hot at first, and then used cold. For breakfast, my mother would pour off a tumbler full of milk, and let it stand so that the cream rose, and then this tumbler was good enough for a king. We certainly did not live luxuriously, but always had enough,

thanks to my good mother. She had to plan for my clothes, which she had made for me by a woman in Worcester. As this was a boarding place, I always had to wear shoes, even in the summer, lest we be considered poor, and so that I could associate with "the boarder boys" on fairly even terms, although at times I felt jealous to see how much they had. Here we lived until I was through college, with some winters for my mother in the old Chicopee house with Cousin Emily Stearns while I was at Amherst.

IV

Princeton Environment and Experiences

I WILL give now a more detailed account of my Princeton environment, beginning at the time when I first knew it as far back as 1867. The center of the town was designated by a square "Common," on one side of which was my grandfather's house, a wooden house, painted white, with green blinds, like all the better houses in town. Consequently, I used to think that all houses were made so. South of our house stood the Wachusett House, with its big barn, and in front of it a croquet ground, where the players used to assemble in their crinolines. Years before, there had been a smaller hotel in the same place, with a swinging sign. This was kept for some years by my grandfather, who made all his money there, with which later he had bought, adjacent to the center of the town, a tract extending down the street known as the "Avenue" to the south, and along the main road past Dr. West's house, a piece of about twenty to twenty-five acres. He sold the south point to his brother-in-law, Hamilton Wilson, and kept the rest, which included several small houses. Here he had built his house, first cutting off a small area in front to make a half of the Common. He built at first a long, narrow double house, one-half of which was rented to the Congregational Church, to serve as a parsonage. This house he sawed in two later. This is about the first thing that I remember, for it naturally produced a profound impression on me, since this house, which looked very big to me, was sawn through with hand saws. When the parsonage half was moved off from the part that was left, and which we thought of as ours, there was exposed to view a huge oven, built

of brick and covered with plaster, long my grandmother's oven where she baked her pies. I well remember that she used to have a small, low, pie table, where she would put her pies and bread, taking them out on a flat shovel. I remember also how it seemed like a good joke on my grandmother to push my finger down into a hot mince pie, and how I did not wait to see how she would take it, but began to howl with pain, and how my grandmother laughed. Above our house the Congregational Church stood on the "Meeting-House Hill," with a long row of horse-sheds behind and around it. When a later generation took down some of the horse-sheds it seemed as if there were indeed a people that knew not Joseph, and as though the end of the world was near; and when years later they moved the Church itself from the hill and put it on a side road to make way for the Memorial Library and the new Town Hall, I realized that as some Greek philosopher once said, "πάντα ῥεῖ," (all things flow). On the other side of the Common there was another large hotel, the "Prospect House," later known as the "Princeton Inn," and these hotels made Princeton a real boarding-house town, where in the summer people would come from Boston, Providence, and even New York. Someone wrote an article about Princeton, under the caption, "Hide-and-Seek Town," in allusion to its sudden appearance and disappearance when approaching the town by rail.

The town was so much of a place for summer boarders, that even a photographic saloon was established on the Wachusett House lot, and we went and had our photographs taken. I still have from these a stereoscopic view of my mother, my father, and myself; also a similar one of my grandfather, grandmother, and their youngest child, my Aunt Abbie, then a young girl. This last must have been taken about 1863, for I first remember Aunt Abbie as a young, unmarried woman. The same photographer took also a stereoscopic view of the guests playing croquet on the Wachusett House

grounds, showing just the view that I so often saw when I looked out of my window, facing the hotel. Aside from these two important hotels the town had many others, one kept by Mr. Heywood, called "Mountain Home," I think. The Heywoods made a strong impression upon me. A very scholarly man was Heywood. He was not at all conventional, rather the reverse. He never went to Church, and gave his children names unlike those used by the Puritans, Vesta, Hermes, Psyche, Ceres, and Angelo. At his funeral he was carried to the sofa dressed in a white gown, and I do not know whether his body was put in a coffin or not, but he had to conform to custom at last, no doubt, as the laws would compel hygienic decency. He was certainly a most peculiar and unconventional man, a graduate of Brown University, and thus one of the scholars in Princeton. I remember going to sleep at night, while he and my father were discussing important questions, sitting out on the piazza. I could hear their voices, and the talk would be broken from time to time by Mr. Heywood, who had a very individual laugh, that sounded like "Aha," and reminded me of the passage in the Bible, "Those that say A-ha." My father was very witty, and very sarcastic, and his talk tickled Mr. Heywood, but naturally they didn't agree, for my father in religious matters was well brought up and the two used to discuss endlessly without ever agreeing, but both liked to discuss. Mr. Heywood was a free-lover and published a paper called *The Word*. He also wrote a book with the title, "Cupid's Yokes," which caused him a prison sentence for sending obscene matter through the mails. He was convicted by Anthony Comstock, which aroused my interest. Heywood annually held a free-love convention in Boylston Hall, the town hall above Elbridge Gregory's house. The attendants at these conventions were among the most curious in dress that I had ever seen, or have ever seen since, although I have since then been around the world, and seen some

queer people. Once there was the famous Dr. Mary Walker, and there were several women who affected masculine dress. There was one who wore a woman's bonnet, but a man's suit of clothes, and threw over her shoulders a feminine shawl. My grandmother on seeing her pass, would say, "There goes the Man-woman." About this time Mr. Heywood established a new Era. Instead of calling a certain year, A.D. 1878, he would call it Y.L. (Year of Love) 6, or some other small number. He was certainly a very remarkable man, but since then I can see that he was honest in his beliefs, and a real martyr to his principles. His wife was still stranger, and would speak at these meetings in a way that one wouldn't hear among the more conventional people, but I now think that she also was sincere. My mother and I liked her, but did not understand what she said. She professed strange powers, and once, when my mother wanted some lemons very much, Mrs. Heywood leaned over the fence with some lemons in her hand, and said: "I knew that you wanted lemons, and I happened to have some, so I brought them." When once some young fellow, not understanding free-love, made an improper proposal to her, she replied: "No, for I do not love *you,*" which gives the entire idea for which the Heywoods stood.

On the other side of the Common, opposite my grandfather's house, was D. H. Gregory's store, where the Post Office was, and my grandfather used to go over twice a day for his mail, and thus wore a path direct to the store. I used to see Uncle Elbridge Gregory, who walked on his heels because of rheumatism, come down to the store twice daily from his house just above the Prospect House. His brother, David, was the proprietor of the store; and David's son, Josiah, was a clerk there. They had a code to mark the prices of the goods, by employing the sign, "The Company," which was made up of ten different letters, and hence gave the ten digits. I used to go often for butter, but I would always ask who made it, and when I

heard that a certain woman was the maker, I was taught to say that I wouldn't take it. Josiah built a large wooden house just opposite my grandfather's house, and I used to go over and see what was being done each day. Once I stepped through a hole in the second storey, and Josiah, who was below, heard a noise, looked up and saw the legs of a small boy kicking frantically, caught only by his hips, and dangling down in a vain attempt to get up again. One evening, I went over there, and saw that the workmen had just laid the concrete floor of the cellar. I conceived the idea that if I walked along there, I would be the first who ever walked across, and I was. The family still show my footprints going across their cellar. But at last Josiah's house was finished, and later, when they had a new baby, Louise, I was taken up to see her. She had seams across her eyes, like spectacles, and I at once said, "That little girl will make a professor." Louise is now a Professor of Biology in Barnard. Recently, when she came to Northampton, we compared notes, and found that she and I were the only theoretical biologists coming from Princeton, but that there were several others, who were commercial biologists, which indicates the signs of the times. We also found out that we were very distant cousins, although this relationship was too distant to account for our common biological taste by heredity.

When the Boston, Barre, and Gardner Railroad, that went from Gardner to Worcester, was built, the town fathers of Princeton, after considering putting a railroad station, then called a "depot," in the centre of the town, voted strongly against it; and Princeton was reached from two depots, the one called Princeton, about three miles to the west, and the other, Brooks' Station, about the same distance south, where the depot was made out of a farm-house belonging to a Mr. Brooks. We used to reach Worcester by going to either, but the stage came only from Princeton Depot; while if we

came to Brooks' Station, we had to walk. Consequently, when going in to Worcester, during warm weather, we could walk down to Brooks' Station, which was a bit nearer Worcester, and we could thus save five cents on the fare. Princeton was built on two hills with a road perhaps a half-mile in length connecting them. All that was needed to condemn anyone was to say of him, "He lives on the other hill." The main street of the town left Gregory's store and went first over "the other hill" and kept on to Princeton Depot, and then on to Hubbardston, and eventually to Gardner. As the commerce to the store came from the depot, there was much traffic, including the stage route along this road, so that eventually the town decided to make it a better road. This took place during the winter; and on going to school, I would pass by this road twice a day. This must have been the winter of 1876, or about that time, for while I belonged down at District No. 1, where my father had gone to school, when I was about twelve years old my neighbor, Harry Beaman, and I changed our school district to No. 9. There, I first met the Grimeses who lived on "the other hill." Lincoln Grimes was about my age, and Thaddeus was a bit younger. I first got them interested in collecting caterpillars and raising them, and at last they included the collecting of butterflies and moths, where they quite surpassed me in my own field, although they did not follow as anatomists. These boys were both very mechanically-minded; Thad dammed up the water in his father's pasture, equipped it with a water-wheel and used the power to run a little saw up and down, with which he could saw bull-rushes. Later on, his father gave him a little shed or cabin, where he first built an oven of brick, and then laid upon it a ten-gallon boiler and thus generated steam, and was able with this to equip a lathe with steam power. Lincoln was more mathematical and a better scholar. He attended later the Worcester Polytechnic Institute, to enter which he had to read some hundred

pages of Erckmann-Chatrian's "Le Conscrit de 1813," and I read that with him. The last I knew of the boys, Link was in Chicago as one of the experts laying out the switches and curves for one of the great Western railroads—I think it was the Rock Island and Pacific, although I am not quite sure—and Thad was teaching in a technical school in Atlanta, Georgia. As entomologists they did many things that I shall always remember. One night, the boys slept in the attic where the windows were open. They were awakened by the Polyphemus moths brushing against their cheeks and roused themselves up enough to find the attic entirely filled with male Polyphemi, attracted by young females that had just hatched out. They caught and mounted about a hundred and then let the rest go. One may imagine what good companions they were to me. They were among my best friends there in Princeton. I unfortunately have now lost track of them, but if these lines ever meet their eyes, they must think of how much they meant to me then and later.

One thing which I remember well is the Boylston Cemetery. This was an enclosure of about an acre, surrounded by a massive stone wall, built of square granite blocks, one tier thick all around and two tiers in front, where the land made a little hollow. This wall was the finest place for a small boy to walk on, for it was low enough to step up on from the street, and never during my youth did I use the road past this wall. There was once an old tomb there, but a new one was made, taking advantage of the hollow of the land, and when this was done, the bodies were removed from the old to the new. My father and I were present during this change from the old to the new, and some workman said to us that Mrs. Boylston didn't wish to have anyone there while the bodies were being removed. My father looked at Mr. Brunsen, who was with us, and smiled a broad smile, the smile that I always remember. My grandfather took care of this Boylston Cemetery, and I well remember that he spoke

to me once about not trampling around the tombs, which I did in order to get Hawk-moths (Sphingidae), which were thick about the honeysuckles. In the spring there was a certain kind of honeysuckle about which these moths used to collect, and it was about this time that I used to get these Sphingidae.

Princeton, when I knew it, was quite given up to summer boarders, and thus I had the chance of meeting many city people. When June came, I saw again my friends among the boys, who came up from Boston and New York to spend the summer. As my grandfather's house was next door to the biggest hotel, the Wachusett House, and right across the Common from the Prospect House, it was very convenient for me to see my friends. My best of summer friends came from Arlington Street, Boston, the son of a well-known surgeon, Dr. William B. Porter. The son, "Allie" Porter, now a distinguished surgeon, was nearly the same age as I, and we became intimate friends. Both he and his father were very good to me and gave me some things that were very important to me. For instance, one summer, Allie brought up to me a jointed butterfly net which I kept for years, and another year he brought a dissecting scalpel. Allie and I became very expert with a form of sling which we knew as a "catapult," and used to practise with it on birds and other small animals. I well remember, when I went down to see him in Boston, going around to try and find "dress-pages," a form of round rubber cord for holding up ladies' trained skirts, which was already nearly extinct, and could be found only in the most old-fashioned shops. These dress-pages were so valuable to us, that it paid to look for them, and when we found any we would buy up all we could afford. Allie collected "the Birds of Boston Common and the Public Gardens," an ecological collection that proved of great value. Our greatest target in Princeton proved to be Beaman's barn, the barn of the Wachusett House. Once, on a day never to be forgotten, Mr.

Beaman, whom we always knew as "Old Beaman," came to us as we were shooting at something, and stopped and watched us a while. We thought he was interested to see how well we could shoot and tried to do especially well. Finally, we stopped and put our slings together. But this was the chance for "Old Beaman." He put his hand over both; "Let me take them," he said, and went off with them, leaving two boys astonished and too mad to cry. We came down to my grandfather's pasture, and found my mother, and told her what had happened. "There are no policemen here," said Allie, "I thought you could do anything you wanted to." Old Beaman had lost the most of his fingers on one hand, and I shall always remember the way that fat hand looked, with the remaining fingers hooked about our slings. Now, after years of thought on this event, I have come to forgive Old Beaman, and consider him to have been a very patient man.

I also had experiences with two professors, both middle-aged men, one from Harvard, and one from Yale, although I need not say which was which. One summer, I had a pet crow "Jack," and used to take him with me, on my arm or shoulder. I also raised some potatoes, and once I was going down to dig them, taking my grandfather's wheelbarrow. I remember that I wore a broad-brimmed hat, and carried Jack on my shoulder. Thus equipped, I met the professor, who seemed pleased to see this small boy with a pet crow. He stopped me and said: "This is a raven, is it not?" "No, Sir," I said, "the bird you refer to is probably the Corvus Europaeus, while this is the Corvus Americanus; they belong to the same Genus, but have specific differences." My experiences with the other professor were not so pleasant, and consist of two Acts. The first was staged in Mr. Grimes's house, where his oldest son, Albert, had a printing press and got out a weekly paper, "The Weekly Reporter." I asked to print there, and printed a few pages of a book on "The Butterflies of

Princeton, Massachusetts," illustrated with wood-cuts, cut by myself, some of which I still have. Naturally, when working, I got well covered with printing ink, and as I put on old clothes, I looked a good deal like a journeyman printer, and not at all like an entomologist. There came into this printing office, where I was working alone, my second University professor, filled with a spirit of patronage. "Well," he said, "this is a fine business you are in. If you work hard and constantly, you will become a master printer, and have a shop of your own some day." Of course, I should not have been offended by this, but I was. I said, "I don't wish to be a printer." "Well, what do you wish to become?" said he, with sarcasm. "I wish to become a surgeon," said I, for this was what I would have to be to carry out my scientific longings. This speech was too much for the professor. He looked at me a few minutes with contemptuous astonishment, and then spoke, "Why, my nephew has just become a surgeon only after years of study, and it is far too presumptuous in you, a common printer, ever to hope for such an occupation." I saw this same professor but once again. Then I was at the railroad station, waiting for the Worcester train which would take me to the Worcester Classical High School. Under my arm I carried Xenophon's "Anabasis" and similar books, and the professor, not recognizing me as the printer whom he had so completely squelched, said, "Well, you are doing the noble thing, beginning your Classical studies. If you continue, you may sometime become one of the world's great men." (These were not the exact words he used, which I cannot remember, but they were along the same line and meant to be very encouraging to a young classical scholar.) These two were the only real professors I remember about in my Princeton life, but I have always remembered them, representing two of our best universities. I remember one kind old man, a Mr. Barrows, a retired tea-merchant, who always called me "Harry,"

owing to a mistake in understanding my name. I used to meet him daily, as he lived across the Common from me, and each morning he would say, "Good morning, Harry," to which I would reply, "Good morning, Mr. Barrows." Six years afterwards, I met him unexpectedly in Geneva, Switzerland, on a lake steamer, when one was getting on and the other off, and the officers were impatient to change the passengers, and again he said, "Good morning, Harry," to which I replied, "Good morning, Mr. Barrows." Later on, we met in Geneva, and had our first long conversation. I shall always remember Mr. Barrows with much pleasure; a man with a red face and white side whiskers, and a very kindly expression.

One summer was made memorable by the coming of little May Chickering to spend the whole summer at the Wachusett House, with her big half-sister, Annie. They were to stay at our house and board at the hotel. The night they were expected to come in the stage, I stayed away as I was somewhat shy, but after she came and when the light showed that she had gone upstairs, I climbed the cherry tree in front of the house, and saw May and Annie, and then felt it safe to go in. My mother said, "You bad boy, poor little May wanted to see you, and finally, after waiting for you, went upstairs to bed." The next morning, when I met her, I said, "Do you know how to play stick knife?" "No," she said, "but I can learn." So I took her out in the front yard, and we started to play. Meanwhile, my friends came around, and, when they saw this strange girl, whom I had warned them about, sitting down and playing stick knife like anybody else, they got much interested, and soon came over the fence and played also. Thus there began a very wonderful and unusual summer. We went down into Beaman's pasture, and chased his pigs, using the stock of my jointed butterfly net to hit them with, which gave us good exercise. As they say in country papers, in describing a party, "A good time was had by all." When May left,

the boys brought the best specimens from their collections to give her: stamps, butterflies, and many other things. The more sentimental of them exchanged hair with her, and we were quite desolate for a time.

[Later when I went to Boston to visit the Chickerings, May, who was a little younger than I but knew Boston much better, piloted me around, hunting out every sort of place where we imagined there might be a collection of natural history specimens of any kind. Thus we found many little shops where there were really objects of interest, in addition to some others where the owners must have been a good deal surprised or amused by our inquiries.]

The story of my Princeton experiences would be incomplete without including an account of my pet crow, Jack, concerning whom I had told the professor that he was not Corvus Europaeus, but Corvus Americanus, the same genus, but with specific differences!

I obtained two young but somewhat fully-feathered crows from a crow's nest in the woods, on the top of a tall pine tree. I got them with the help of the Grimes boys, by climbing the tree with a basket tied to a long string, then climbing up to the nest and putting them, one at a time, into the basket, which I then lowered to the Grimeses, who finally got them to the ground. After this, the crows' parents spent more than a week hunting about the woods in search of their children. I brought them home to my grandfather's barn and kept them in a pigeon-house which I had made. Here I fed them several times a day with chicken dough, made by taking corn meal and adding water. I fed them at first by taking my finger and pushing the dough down their mouths quite to their stomachs, in which they assisted instinctively, pushing their heads over my finger, as they would doubtless have done with their parents' beaks. One of them had a slight fall when I was trying to get him to fly, and the fall injured his beak and made it twisted, so as to put the

lower jaw off the upper one a little, which made a little difficulty in eating. This was permanent, and, although it was not enough to be serious, it was yet sufficient to identify him by. I called him "Jack" and the other one, "Jill," but Jill soon died, and thus Jack was left alone. When he got large enough to feed otherwise than on chicken-dough, I would take a cup of milk and a slice of bread, break off a piece of bread, drop it in the milk a moment, and then put it down his throat. One day I saw him at work doing something. I waited and soon saw Jack break off a piece of bread, drop it in the milk, and then eat it. Once he left it a little too long and it became too soft to eat, but that did not happen again. He was always careful after this. One day, a lady gave Jack a cookie, and as this was too hard to eat, he went up to the place where I always kept his milk, but there was none. My grandfather always kept a bucket on his grindstone, where he could pull out a plug and get water for grinding the tools. Jack found this and thus soaked his hard cookie. He would go to walk with me, sometimes for miles, and was never confined in the least. I would go out into our field and call "Jack, Jack" and after a little time he would reply with the usual "Caw," and I would soon see him come towards me from down in the pasture. Then I would put out my arm and he would light on my wrist. When we went for a walk, Jack would pick out a tree along the road, and then wait until I had gone past, when he would select another tree ahead of me, and fly to that. As he flew past me, he would so direct his flight as to pass close to me, and when passing my head would salute me with a low croak. When I would leave the road and go into the woods, Jack would fly high above the trees until he saw me. Thus I could never lose him. One day, I saw a lot of wild crows flying above us in the woods, and when they saw him, they began a frightful cawing, and came down much nearer. Jack was evidently frightened. He came directly to me, perched upon my arm, put his head between

my body and my arm, and actually trembled. I long tried to guess what they would have done with him, if I had not been there, but, if I had not been there, they would probably not have made all this cawing. He used to sleep in the cherry tree in front of the house, and once, when I went up the hill with the washing, he heard the front door shut, and although he was almost asleep, he followed me up the hill, but, when I was ready to go, Jack was sound asleep in the neighbor's tree, and did not come home until morning. Whenever I visited other people, Jack would sit up on the roof of the house, and occasionally look over through the window to see when I was coming. My grandmother used to get up early, and, when she saw him, she would try to frighten him away by making a bad screech. This Jack soon learned, although he was badly frightened at first, and, when in the morning he came up on the piazza and saw her, he would screech in the same way, thus establishing the method of greeting her, although she did not like it very well. This was one of the reasons why I had to get rid of Jack before long. Jack was very friendly with all to whom I showed him, with the exception of a set of three Negro girls, to whom I attempted in vain to bring him. He would allow me to bring him so far, but no farther. At just such a point, when I would bring him near them, he would always fly off. I was much ashamed to have him do so, and feared that the Negro girls would be angry, but they only said, "Why, he's afraid of us," and laughed as Negroes always do. Once, when I had with me a small boy who was fat and wore red stockings on rather large legs, Jack began to peck them, and quite frightened the small boy. Here again, as in the case of the Negroes, I was quite powerless to help matters. Whenever he tried fooling with my Maltese kitten, this latter animal would defend itself by spitting, which would frighten the crow; but when he spread his wings in a threatening attitude, that would frighten the kitten. The two were of about the same size,

and in general were friendly to each other, but each had a weapon that caused the other to fear. When finally the kitten died and I took it up to the garden to bury, Jack was present at the funeral, appropriately dressed. At first, he was respectful and behaved decorously, but, when he caught hold of the kitten's tail with his beak, and got no response, he began to drag it away in triumph, and I had to drive him off.

His activities were continual, and added to the necessity of selling him. My grandfather had a pile of little seed onions, and as it kept being reduced in size my grandfather thought that they were being taken away by the neighbors' children; but he one day saw Jack busily engaged in taking them, one at a time, up to the roof of the barn, and putting them beneath the shingles, thus exonerating the children. My grandfather had the well covered by a flat rock, in which he had long before drilled a round hole for a pipe. Once we saw Jack going out into the road, getting a little stone, dropping it through this hole, and then listening until he heard it splash. My grandfather put a brick over the hole and thus stopped Jack's fun. A goat was tied out in the grounds of the Wachusett House to graze, and Jack soon found out that he could peck at its heels, and then get away just far enough not to be hurt by the goat, which was naturally held by the tether. This so annoyed the goat that he could not graze, and his master had to take him away. In this way, Jack soon became unpopular. I sold him to a Worcester man for one dollar. In Worcester, his main sport consisted in going down to the Front Street depot, flying up to the tall tower, and watching the trains go in and out. Then he would flap his wings, and show great excitement. He was probably shot at last, for he become unpopular there as he did in Princeton, by entering any window that he found open, getting anything that was bright or glistening, and hiding it for his collection.

V

Educational Influences

THE adjustment to school conditions in Princeton presented some difficulties. When I came up to Princeton, I found the children very different from those in Miss Delano's School. I used to wear buttoned shoes, while they wore thick leather ones with the toes reinforced by copper tips. I teased my parents to let me wear this kind, but they refused. I had some other things which the children laughed at; for example, a white slate that one could write on with an ordinary pencil. But the thing that I was most ashamed of was that they called me "Professor," which they used as a term of reproach. To-day, when anyone calls me "Professor," I think that he is making fun of me, and that I ought to hit him, as I always used to. I went to two district schools, No. 1 and No. 9. No. 1 was down the steep Gregory Hill. Years later, I pointed this school out to my wife as we stood by the hay-scales on the top of the hill, and she asked if that was the hill that I had described to her as over a mile long, up which I used to come to get my lunch. I confess it didn't seem as long as I had thought it. No. 9 school was composed of scholars who were nicer. Here were the Grimes boys, and this school was at about the same distance from my house as No. 1, but I didn't have to go down a long hill, but on a nearly level road, and past the Boylston Cemetery, the wall of which I could use as a sidewalk! The town School Committee allowed me to make this change, and things were better in all respects. Then, too, there was a "High School" kept in the fall at Boylston Hall, a private enterprise by some teacher who could carry the scholars farther than the

other terms. The scholars paid five dollars each. This was, of course, done in coöperation with the town School Committee. The desks for this school were furnished by the scholars, and were made to hang upon the backs of the old settees. My mother had the carpenter, Mr. P. C. Doolittle, make a very fine new one for me, while most of the others were made at home, and exhibited much individual taste. Whenever there was an entertainment at the Town Hall, the town fathers, or their emissaries, removed all the desks and restored them the next morning, much to my mystification.

The first term of "High School" that I went to was in the fall of 1873. It was kept by a Miss Sawin with curls. In the High School, one could study Algebra, and sometimes Geometry, and there was occasionally a college student who taught Latin and could even teach Greek, but nobody cared to take it. I well remember that we once had a teacher who stood up in the hall and asked, "Does anybody want to study French? Does anybody want to study German? Does anybody want to study Latin? Does anybody want to study Greek?" We all thought this a piece of conceit, as if anybody could teach all these subjects! Yet I had a chance to take Latin once. I had one fellow scholar, Harry Beaman, the youngest son of the man who took the slings from Allie Porter and me. At this time, we made a translation, which I was later very much ashamed of. We were reading some Latin that was simplified from Livy, concerning the death of Romulus, who was taken away from the sight of men. This I gave as "In the midst of a violent tempest, a man had his eye blown out." But Harry afterwards went to Harvard and I to Amherst!

I remember a fall term of High School in 1876, when I had for a teacher Sidney E. Bailey, who first taught me Botany, with plant analysis; we analyzed Hamamelis virginica (which proves the time to have been about November); also a few dried plants from his own collection.

The winter of 1875-76, we spent in Bangor, mainly at "Aunt Annie's" and "Aunt Helen's," about half at each. This winter was full of adventure. I met a nice crowd of Bangor boys; we were all reading Jules Verne's "Mysterious Island" and "Twenty Thousand Leagues Under the Sea," and we used to make appointments at the library to relieve one another of the volumes when we were through ourselves. Again the winter was made memorable by my being initiated into the mysteries of the game of chess. This desire came from reading in *St. Nicholas* an article on "How to Make a Set of Chessmen," and as I tried to make some, I wanted to know about the game. I was taught by a dear old lady, Mrs. G. K. Jewett, who lived all alone, with servants, in a large house on Broadway, I think. I went, always by special request, put my cap on the table in the hall, and was ushered into the back parlor where this old lady would be awaiting me with a set of chessmen spread out before her. Naturally, I usually got beaten, but learned the rudiments of the game. When I came home I introduced chess to some of my associates and neighbors in Princeton. Harry Beaman and I played some two hundred games the next winter; I remember also Clara Davis, Sam's daughter, who was a natural player, and could keep the board in her head during an entire game, while out in the kitchen. Her sister, 'Phrony, would call out the moves, and she would advise her. When she did, I couldn't beat 'Phrony, although otherwise I often did. Among others, I taught the game to Mr. Daniel Miles of Westminister, a friend of the Davises', and brother of Gen. Nelson A. Miles. Sometime about 1915, this Mr. Miles died in Washington, just after having left a club where he had been playing chess with his brother, the General, "a game of which both were very fond." In this I saw the influence of the little boy in Princeton, and, still farther back, of the solitary lady in her magnificent parlor.

By the summer of 1876, I was completely immersed in the study

of butterflies and moths, collecting the adults, raising the caterpillars, and hatching the chrysalids and cocoons. The collecting of butterflies and moths, and the rearing of their larvae, gave me great inspiration and furnished me with the best of schools. With the exception of the Grimes boys the greatest aid in collecting, in which pursuit I spent all my time every summer, was that lent by the "boarder boys," especially by Allie Porter. Our first meetings every summer, just after the schools had closed, were memorable ones, and then and there began plans for a more intensive collecting and exploration of the country round.

At the age of fourteen, I started a scientific correspondence with M. Alfred Wially, a specialist in silk-producing moths, a Frenchman living in London, and we exchanged many hundreds of cocoons, and also wrote friendly letters.

In this, as in so many other ways to be described later, I was helped by the Congregational minister, the Reverend George M. Howe, who let me have a room for raising my caterpillars.

In my anatomical work, one of my chief benefactors was Dr. West, who not only lent me books and helped me dig up his horse's bones, but allowed me to boil in his house such animals as my mother was unable to manage for me, as for example, a cat, that I might get the bones. Dr. West was one of my best friends. One may find in the cemetery at Princeton, where are also my family, the marble tablet of Dr. Joseph O. West, with the inscription, "γνῶθι σεαυτόν".

A number of years ago, I went again to Princeton and found the old dentist, Dr. Oscar Howe, a cousin of my father's, who had kept the teeth he had extracted for a long lifetime, and, as then they used to "clean the mouth" before fitting in "false teeth," I found among the large boxfull in the Doctor's barn, enough sound teeth to use for several years in my work in Smith College—yet another instance of

the manner in which the old Princeton people benefited me. I think of many others in Princeton who befriended me, but among the New England farmers, I can think of but very few who truly helped me. [Of course the Princeton farmers could never understand what I was trying to do, since my interest in natural history meant nothing to them. I remember that one time when I was trying to get cocoons from a walnut tree, its owner called out, "Boy, don't be knocking off them green wa'nuts!"]

My main friends bore such heathen names as Cecropia, Polyphemus, Luna, and Promethea, and, when I try to recall others, I think only of such as Papilio turnus, and Vanessa antiopa, and the fritillaries clustered about the milkweed blossoms. Many have raved about the beauty of the high-lying Worcester plateau, of Mt. Wachusett, and the many glimpses of fine scenery, but I think of the countless clumps of various plants, of the bunches of nettle behind the neighbor's barn, where I could depend upon getting the larvae of Vanessa antiopa, and of the skeleton of the woodchuck which I found in the next pasture!

For several winters, 1877-80, my mother would read to me aloud evenings, covering in that time nearly all of Dickens, a dozen of the best of Sir Walter Scott, and many other standard works. My mother always had a beautiful reading voice, and one that could read all a long winter evening without tiring. I would sit and whittle, or draw, or engage my hands in some mechanical pursuit while listening.

This was a sample of months and months of evenings, while I was growing up, and getting more ready to do things, the suggestions for which were already shaping themselves in my head.

In picturing the stories of my mother's reading, I naturally had some difficulty, especially in the early romances of Scott, where I had nothing to serve as comparison. I did the best I could, and thus

it was that all lordly castles shaped themselves pretty much after the style of the Grimes house, once the home of my maternal grandfather, Dr. Chandler Smith. The battle between Front-de-Boeuf and Brian de Bois-Guilbert took place on the side piazza, by the door leading into the kitchen, and Rebecca was imprisoned high up over the wood-shed. Still I didn't lack romance, and did the best I could.

As another evening occupation, there were always my grandfather and grandmother to visit, just through the kitchen, and I used to hear from them long tales of the real olden times, when they were young.

My poor grandmother had had a serious fall down the cellar stairs and had broken her hip and never walked again without a crutch. I well remember the day it happened. My mother had asked me if I had put away my saw and saw-horse in the cellar. I had run down to do this when I heard my poor grandmother's voice from the dark floor, "Well, Hal, I'd like to have broken my neck." Then she asked me to stay there and let her see if she could stand. She had been carrying a couple of plates of butter down the cellar stairs, and had thought she was on the lowest step instead of the next to the lowest, and had thus fallen. When she found that she couldn't get up, she asked me to call my grandfather and he got her upstairs. But that was the beginning of serious trouble. The old doctor gave her chloral hydrate as a soporific, and I heard her repeating all night whole poems, and Bible passages. After this she lived most of the time in her little kitchen, where I used to go and see her, especially evenings. My favorite seat was the wood box, the logs of which I would arrange so as to be comfortable. Here she would receive her old friends, and here I would listen to their talk, I think now to my grandmother's annoyance, although she never asked me to leave, which I now think was very nice of her. She found our set of Dickens, and read them devotedly, while my grandfather read

but very little, but was much pleased with "The Boys of '76," by Charles Carlton Coffin, also the *Boston Weekly Journal* which he took.

Whenever I think of my mother as we lived together at Princeton, I feel that I owe my success largely to her, and, think involuntarily also of *her* mother, Asenath Babcock, whom she so greatly resembled, and who had caused dismay in the heart of her neighbor, young Ivory Wilder, when he came into the kitchen of his father's house, and saw her suddenly grown up. My grandfather Wilder was always fond of my mother because of her close resemblance to her mother, Asenath.

And now I want to write, as a sort of confession, of my conversion, the result of a series of Union Meetings held in the vestry of the Congregational Church, and presided over by the Methodist minister, the Rev. Mr. Noon, and the Rev. Mr. Howe. Many other people, mostly young, had testified, and I finally felt called upon to do the same thing; so I told my mother, who was sitting by me, what I felt inclined to do. My mother tried her best to keep me from doing it, but I persisted, and said, "Hitherto I have led a very wicked life, but from now on I hope to be better," and then sat down, feeling much embarrassed, and very self-conscious. Thus, when Mr. Noon, the Methodist minister, said in ejaculation, "Praise the Lord!" I said, still very self-conscious, "What, Sir?" and was then overwhelmed with mortification. Years afterwards, I saw Mr. Noon again, but I don't think he knew me. I was then a Professor in Smith College, and was out in my yard at Dryads' Green. An elderly man leaned across the hedge soliciting for the Temperance Cause. As I reached him some money, and took his book to sign my name, I saw his name, "Alfred Noon." I would have told him of Princeton, but remembered him too late, and thus let him go. Another reminiscence, which I recall without the mortification that I shall always

have regarding the Rev. Alfred Noon, was that of association with the other clergyman, the Rev. Mr. Howe. On Mondays he was in the habit of taking a long walk, to get rid of the depressing effect of a too strenuous Sunday, and so he established a Walking Club of some dozen boys. We walked five or six miles, and the previous Sunday evening we would go to Prayer Meeting, conducted by Mr. Howe, and feel very superior. I remember once, when Mr. Howe announced a hymn to sing, "Saviour, I Long to Walk Guided by Thee," we felt that it was a very personal hymn, referring to our prospective walk next day.

My more formal education was a serious problem for my mother, but I managed to get the conventional education through the kindness of my friends, especially Mr. Howe.

When the Rev. George M. Howe, a young theologian from Andover, came to Princeton as the new minister, he asked my grandmother to board him, and she consented mainly because he reminded her somewhat of her son. He stayed here until he was married to Sarah Kendall of Lowell, when he had to seek larger accommodations. During this time he began teaching me Latin, and I had got the declensions of the nouns, pronouns, and adjectives before he left. Then after this, he continued with me for a year or so longer, until I started Caesar. At the same time, I took advantage of any of the teachers, mainly the "High School" teachers, who could teach me a little Latin, and they, particularly Mr. F. W. Pike, assisted materially in the work of giving me the necessary classics. I also tried a little Caesar in Bangor, during the winter of 1875-76, but this did not amount to much.

In the fall of 1878, when I was fourteen, my mother and I went on a visit to Hinsdale, to see my mother's uncle and aunt, Uncle Charles and Aunt Abbie Smith, also Aunt Sylvia Smith Greenwood (perhaps she was not there at this time). They wanted to size me

up and see if it would pay to educate me. I knew what they expected of me, and tried to work on the farm (work which I hated); gave out in two days, and after this hung around in a homesick fashion. The relatives apparently decided that it wouldn't pay, and nothing more was ever said about it.

A second attempt to interest influential people in my behalf, probably inspired by Mr. Howe, who had a sincere conviction that I should be educated, led to my visiting Dr. Charles Parsons in Providence, then teaching Physiology in Brown University, the son of the older professor in that chair, I think, Dr. Usher Parsons. Dr. Charles Parsons had married one of the two Boylston girls from Princeton, and they were at that time rather elderly people. Mrs. Parsons's sister, Mrs. Nightingale, a widow, also lived in Providence, and their old mother, "Lady Boylston," as she was called in Princeton, lived with the latter. I spent about a week there; studied the skeletons in the Museum; found out some detail of the carpus of the Shetland pony skeleton there (once belonging to Queen Victoria) that Dr. Parsons had never noticed, etc. I met for the first time the entomologist, A. S. Packard, who showed me a Samia gloveri (which I mistook for a Cecropia). This incident awakened great interest in me concerning the possibilities of species being so very similar, and yet considered different.

At sixteen, I began to find myself. Society began to allure me at William Ball's silver wedding, a great event in Princeton. There I found out that I could talk, and apparently entertain, and not feel self-conscious. My first experience was at this event, where I sat at supper with Hattie Gregory, the youngest daughter of David Gregory, the storekeeper. She was a bit older than I, and I had known her always, but here, for the first time, I found myself grown up, with something to say. I wrote things on paper napkins; I collected souvenirs of the affair, and instinctively fell into those little

half-significant ways that fill up so much of the life of young people, and were destined to fill so much of mine for many years thereafter. As a result of this, a real, grown-up friendship with the Gregorys, with all of them, took the place of my childish knowledge of them, and, after this I was a young man, to be invited over there when they had company to entertain, or whenever there was a good occasion.

At about this time, there developed, through Mr. Howe, a series of musicals at various houses in town, during the winters, contributed to by local talent. I took part vigorously in all these, and under the indulgence of the rather kindly Princeton people, who remembered my father's talent and thought that I ought to do things all right no matter how they sounded, I blossomed out into a bass singer and a solo violinist, besides other things. I think I may have been a reciter, for I had unlimited assurance in my ability; and still later, took charge of some of the entertaining at the Piedmont Church in Worcester, treating the parishioners to rare samples of my humor! It may thus be supposed that I attempted many things here, but I remember clearly only bass songs, and that squeaky and uncertain violin, with an affectionate clinging on the notes I happened to get right, and an apologetic sliding over the others.

My mother was a power for good in the town with regard to entertainments, and, with the help of Lizzie Gregory and Mr. and Mrs. Howe, got up several most amusing ones, including Old Folks' Concerts, Christmas Festivals, Farmers' Kitchen Scenes, and actual plays, with Tom Skinner as the star. Naturally, I took part in all of these, appearing as a Tyrolese bugler, Little Boy Blue, and a host of similar characters.

The mainstay in all my fundamental education was Mr. Howe, and his later valiant work in getting me into the Worcester High School, so far ahead, puts him high up on the roll of my benefactors, particularly as he lent a hand at a critical time.

In the early summer of 1880, when I was sixteen, Mr. Howe told my mother and me that I must go somewhere to school, and arranged for me to enter the Worcester High School (later the Classical High; then, the only one). With him I finished reading Caesar, reading from Book I, Chap. XXXX, through the requisite four books in a month; then I took up Greek, and finished a year's work in six weeks, at the same time getting up a year's work in German with a very kind "boarder lady," Mrs. T. D. Underhill. She taught Link Grimes at the same time. This was during the summer of 1880, and I entered in the fall, graduating in June, 1882.

The summer I was sixteen, when I did my hard work in order to enter the High School, I began to feel grown-up. I was better in health, and very well-poised nervously, a new thing for me; and, with the self-analysis produced by keeping a diary, became somewhat sentimental. I read poetry, tried to write a little, interspersed with dissections of the stomachs of rats and mice, and the study of all manner of bones. My diary I tried to keep in literary form, and here I recorded such events as a visit to the camp meeting at Sterling Junction; a visit to an old deserted house (the old John Roper place), and other thrillers. I looked upon my life as rich, wonderful, and full of incident. I indulged in philosophical speculations upon past, present, and future. I was somewhat too introspective, and suffered from being brought up alone, without brothers or sisters; yet, on the whole, I think I was rather healthy, and began to look with admiration and some joy at my daily increasing physical strength. I bought some big ropes from David Gregory, to use in fitting up a gymnasium in the attic, undeterred by his suggestion that I had better buy a saw and saw-horse! Then during afternoons, after my lessons were over with Mr. Howe, I would run over to the Grimeses', literally run, a good deal of the time, and join Link and Thad, with their father, in making hay, a thing I had never done

before. But what fun it was, and how well and happy I felt! The joy of entering into a real life, and being able to do what others could! By the time I actually went to Worcester in September, and began my Junior year in the High School, I was ready for anything. I passed in everything except vaccination, for which I had to stay out the first few days, and I still remember the pride with which I bared my arm to Dr. Howland, conscious that he was looking upon good big muscles, covered by a brown skin. In my speculations of that time, I felt that Man was doubly endowed; that he had not only a vigorous animal body, in which life was very pleasant, but an intellect as well, which, as I might have acknowledged had I been absolutely truthful, occasionally developed to gigantic proportions (but as I tried to be modest, I thought this only to myself). This idea about the size of my intellect was naturally based upon having actually read Caesar, with Mr. Howe's constant aid, and upon owning a Xenophon's "Anabasis," from which I got here and there a word. How I longed to be able to read this work, anywhere, one place as good as another! Once when coming down from Mr. Howe's, going over the Meeting-House Hill, where the Goodnow Memorial Building now stands, I looked into the Xenophon, and actually fell a-trembling to think that I could some time read all this.

During my Junior year at the Worcester High School, September, 1880–June, 1881, I lived with my Aunt Abbie (Mrs. Daniel Davis), on Valley Street, under the frowning turrets of the Oread Institute, an old Boarding School for Girls, built in the style of an old castle. Here I found my first substitute for the Grimes house as the scene for mediaeval romance, and I will not deny that, on my walks about the place, this building, perched upon its high crag, assisted my imagination. Here I got acquainted with two classmates; George Bassett, of Oread Place, and Charlie Marble, of Beaver Street, whose father was of the firm of Curtis and Marble, manufacturers of wool-

napping machinery. J. M. Bassett, George's father, was also a manufacturer of machines used in making cloth. We used to meet afternoons and go over our lessons together, and thus we read a lot of Vergil and Xenophon. My decision to select Amherst in preference to Harvard was largely due to the fact that Bassett and Marble were going there; although what I had heard of Amherst from Mr. Howe (Amherst, '71) and his Class Album especially, which he had explained to me, had interested me very much at an earlier date, so that when I was asked at the Worcester High School what College I intended to go to, I replied, "Amherst." I did not have money to go anywhere; but some kind friends of my aunt, Mrs. Skinner, offered me three hundred dollars a year and so I was enabled to go. These friends, the parents of my little playmate, May, were George Chickering and his wife, to whom I shall ever be very grateful for having started me on my professional career.

Through Marble and Bassett, I got in with the young people of the Piedmont Church (Rev. Dr. Meers), which led to social times, and to participation in several entertainments in the vestry. I shudder to think how I participated, for I counted myself a wit, and my assurance had no bounds.

This was rather a hard year, physically, for I lived a mile from the school, and as the session began at half-past eight, my breakfast was usually by lamp-light, with a rush afterwards. Then, too, every Friday afternoon, I went back to Princeton, usually walking home from the depot, about two and a half miles, and repeating the process every Monday morning; yet my growing strength more than kept pace with these minor difficulties, and I came out all the better for them.

In school I had a seat near a side window in "Billy" Abbott's room (everybody in the Worcester Classical High School during many years will know whom I mean), and there I thought that I

met with my first attack by a designing female. I had been told that the Worcester girls were dreadful flirts, and that I must look out. This I had resolved to do; so when on my very first day a girl next me dropped her pencil and asked if I would pick it up for her, as it had rolled almost under my feet, I sat rigid, turning neither to the right nor the left, and felt hot and uncomfortable all over, blushing to the roots of my hair, I knew. All the time I was thinking: Was this it?—Was this a subtle attack? Finally, as the poor girl wanted her pencil very much, and was urging me to pick it up for her as she could not possibly reach for it herself, I relaxed my stern self-discipline, and just saved myself from being very boorish. The girl wore a large Roman sash with many colored stripes, and had red cheeks that matched the brightest of them. How could I have known that Annie Russell, as she was then, would become Charlie Marble's wife, a graduate of Smith in 1886, the same class as my own at Amherst? But how uncomfortable I felt at this, our first meeting!

My Senior year, September, 1881–June, 1882, was a studious one. I worked hard all the year downstairs in Room 7 with A. Cary Field, preparing for the Amherst examinations. I boarded with my father's old friend, Mr. Alexander Monroe, 4 Kendall Place, the Secretary of the Worcester Choral Union, and was thus very near the school, extremely near if I went "the short way," through a private garden or two, and over a high fence gate, adorned with sharp spikes on top. And it never occurred to me that those spikes had any other meaning than an infelicitous attempt on the part of the owners to decorate it a bit! How indignant I was when they shouted at me one unlucky day not to climb over that fence! I felt my personal dignity seriously attacked, and in my embarrassment failed to dislodge my trousers from a recurved nail, so that the cloth held while I didn't, and the result was disastrous,—another assault upon my dignity! Good Mrs. Monroe sewed up my garments for me,

and made it possible for me to appear on the street. Years and years afterward, when writing up the Scotland Yard case of the burglar who caught his ring on such a spike, and left his little finger all by itself on the top, this episode occurred to me in all its details. I surely thought at that time that I had a complete right to go wherever I was physically able to, and that, so long as I had the agility to jump that gate, I ought to be allowed to do so. This is, of course, a confession of a serious order respecting my sense; but, if it were known, it might aid some other boy, living up to his own ideas of ethics, and quite unable to comprehend the somewhat artificial rules which obtain among the older generation.

Aside from Bassett and Marble, my constant companions in studies, I had John Kendall, whose father was the proprietor of a large hat and fur store on Main Street, near Barnard and Sumner. In the spring, a series of light operas was given at a skating rink, which it was easily possible to attend for the humble price of twenty-five cents; and although I had very little free cash, I could go occasionally, and sit on the front seat with John. I had seen Edwin Booth in "Hamlet" the previous year, but I must confess that I learned to like better the part of Bettina in "The Mascot," as played so sympathetically by Ida Mülle, then just starting on her career. The next year, John met her personally, but I never attained such a height, yet shone by reflected glory through the eminence of my friend.

In October of that year came the remarkable "Yellow Day," and I well remember the intense green of the vegetation in the yellow light. During the winter, a monkey belonging to one of my classmates, Frank Smith, died, and Frank and I skeletonized it, and put the bones together. One afternoon when we were at work, the old ex-Governor, Alexander H. Bullock, died suddenly on the street and was carried into Mr. Smith's house. This was very impressive to us

both. Years afterwards, Frank was with Roosevelt at Nairobi in Africa, on the famous hunting expedition, still keeping up his interest in general Natural History. As payment for the skeletonizing, Frank made a cast of my face, a life-mask, and I came home to the Monroes' with face raw and eyes swollen almost shut, with cold cream, olive oil, tallow, and pieces of plaster, to say nothing of soap and water, rubbed into them. Frank and I used to go to consult the human skeleton in the Public Library, and Miss Young, who was one of my fellow-boarders at the Monroes, and who was for many years a librarian there, used to laugh at the way we ran up the iron staircase making such a din in the reading room where no sound was supposed to be tolerated.

I graduated in June, and the morning after found me with a sort of lost feeling in my heart; a feeling that something must happen to replace the school life, now behind me forever. Before this, however, had come the preliminary entrance examinations at Amherst; Marble, Bassett, and I came up to Amherst, and stayed at the old Amherst House, which I felt then was the last word in luxurious worldliness, prepared to bone down the knowledge contained in a dozen books we had brought with us.

But there was no boning. The train had not left Worcester before a fashionable young man with a cane drew Charlie Marble aside, and said something to him which made him blush and act in a mysterious, self-conscious way all the journey to Amherst; and at Palmer, we were actually inundated by other young men with canes and conspicuous fraternity pins who carried our bags for us, and before we realized it our note books were filled with appointments from about all the fraternities there were. That evening and the next were entirely filled up with visits, one student taking us away from one call and bringing us to another. In the Psi U House, a tall, lackadaisical young man came into the back parlor, and leaned

gracefully over the piano sufficiently for me to get a good look at him. He was smooth of face, and nearly so of head; he had a mysterious smile, and neither looked at the Freshmen nor was introduced to any of them. As I gazed at this resplendent creature, some cicerone behind me said, "That is Smith, champion hurdle racer, holds the championship cup for tennis, is a brilliant amateur actor, and all-round scholar." Of course, I saw many thrilling sights and many noted men during my visit, but this stands out even to-day as my first experience with the truly great. It did seem singular, though, that all these great men were still so young, and that none of the Faculty or the President was ever mentioned in the same breath with them; but then I laid it to the fact that our generation was a really remarkable one, and thought the older ones acknowledged the superiority, which they could not do anything about, and that, on the whole, we were destined to put a crimp in the world's history which would make what the world had already accomplished look like the Annals of a Quiet Neighborhood. For "Here was Smith,"[6] and here were also Arndt, and Bancroft, and Camp, and Ely, and Washburn, and many others; all in one class in one college. It must be that I was born into a wonderful generation, already more remarkable than any of its predecessors. Bob French, too, not even about to graduate, and dressed in a most beautiful green suit! I resolved that when I got home I would get a green suit, too, and indeed I did, a bright peacock green, with blue sheen to it, and I had it made with the trousers so tight that I sat down with difficulty and danger!

I well remember getting a letter from Amherst, announcing the fact that I was entered without any conditions. I opened it while going across the Common from Gregory's store, and I announced the good news to my mother, as soon as I reached home. My friends,

[6] Later my very good friend, the Reverend Roland Cotton Smith.

the Chickerings, true to their promise, gave me three hundred dollars a year, and, at Commencement, they sent up their daughter, May, with a check for an extra hundred dollars in her hand, to look out for her with.

When my grandmother died, two years after my graduation from Amherst, she left me one-fifth of the house, which I took to go to Germany with, and thus I had my Freiburg experiences, and obtained my Doctorate with Weismann, but did my anatomical work with my old friend, Wiedersheim. But that is another story, and does not belong with my "Youthful Recollections."

VI

Early Scientific Activities

IN writing of my early scientific activities, first and foremost I will speak of Anatomy, as this has always been my first interest. This began when, in Cambridge at about the age of five, I discovered in my aunt's room a popular book on this subject, which had as the frontispiece a model of a dissected man, showing the principal organs—what the Germans call a "Phantom." This gave me the purpose of my whole life. It was written by Frederick Hollick, and its preface told, as I learned years afterwards, that the medical profession objected to this popularization of scientific facts, much as the Catholic Church did not believe that the laity should read the Bible. But I am glad that he wrote the book, for it opened up the whole world for me.[7] I soon found also among my aunt's books a similar work by Calvin Cutter, evidently used as a text-book for schools; and then I put Calvin Cutter with Frederick Hollick among my saints, where they still remain. Later on, I was fond of entertaining visitors by showing the course of the food, and other details. For

[7] Possibly there was also an early archeological and anthropological interest as well as an anatomical one, since in his mother's notes concerning him at the age of five we find the following:

"Mamma, I should really like to see the graves of Adam and Eve. I should like so much to see their monuments, and when we travel round the world we shall see them if they are not in Africa. I don't want to go there."

Also from the same source comes the following evidence of his early interest in the study of facial features:

"He drew my portrait on a slate one day, saying he could copy it on to paper just as Moses did the Commandments. 'What a short nose, real funny, nonsensical. Your mouth looks like a box, exactly. Your upper lip is awful thin, and your under one is real fat. Perhaps you are getting fat and the upper hasn't got fat yet.' "—*Editor.*

a long time, letters as phonetic signs did not mean much and I used to pronounce a word by the way it looked. For instance, a guest asked me if I knew where the diaphragm was. I did not quite know but asked him if he meant the "Dimengrium," rather pityingly. When I was learning this I got into the habit of lecturing to my mother and aunt, standing up on the old sofa, and addressing them in serious tones. Then, if they dared to smile at what I said, woe be unto them, for I would then be offended at them, so that they would not dare to act in so unseemly a manner again. I would illustrate my lectures with charts, like other anatomists, with many of whom I was destined to become acquainted a generation later. These lectures were very serious affairs, and my two pupils realized that and sat in a very humble frame of mind. I remember that I described the "Unirary" organs and I wouldn't allow them to laugh. It was about this time that I began writing a text-book entitled "Natural History and Physiology for Popular Use," illustrated with figures, largely from nature, but some copied from other sources, mainly Calvin Cutter and Frederick Hollick, my two great authorities. I planted the seeds of some four-o'clocks, and drew the parts of their flowers. I also drew a hen's skull from my own preparations, and drew the root of celery which I found on the table in the kitchen, from sections of it made with an old table-knife. This was a genuine discovery, that rather complicated things could be shown by sections. I was not so scientific in my drawing of the "stomach," where I gave the numbers 2-9 as the "outside of the stomach," and 10, "the stomach." The intestines of the chicken were a "fake," although not intended as such. They were copied from the flap in Hollick's chart, which had become separated from the original chart, and were found to look like an actual chicken's intestine by watching my grandfather Wilder preparing a chicken for the table out in the old barn in Princeton. In this manuscript I was not happy, for I had

not learned to write script and had to print each letter with great care, all in capitals, with feet to end off every line. I was very determined to write a manuscript, only I feared that, if what a man wrote was called "a Man-uscript," what I wrote would be called a "Youth-uscript" or a "Boy-uscript," as I told my mother at that time. Since then, I have become well-acquainted with Man-uscripts of all sorts, but have never been so much excited over any other as over "Natural History and Physiology for Popular Use."

I soon invented a lovely game which occupied many hours. I first cut out a paper-doll after the usual manner, and then proceeded to "skeletonize" it. I first pared the head down to the form of a skull, and then cut out round holes for the orbits, and cut teeth in the mouth. The ribs caused me some embarrassment, but these I got by folding the chest lengthwise twice, and then cutting out eleven long, narrow holes, which thus became the intercostal spaces in the complete doll. The arms and legs were simpler to do, for they only needed to be made narrower, and then the distal half of each limb slit into two parts. When the hip-bones and the lumbar vertebrae were also cut, the doll was skeletonized, and by taking dolls of different sizes, I could get all sizes of skeletons. I once put along the wainscot of the kitchen in Cambridge (No. 20 Lowell Street), a long series of such skeletons, and when my aunt, Mrs. Skinner, saw them she said to my mother, "Quite cheerful!"

I soon after invented another method of making a skeleton, which consisted of cutting out the individual bones and pasting them upon the parlor door. I waited for this until my mother was away from home, leaving me with an older cousin who was not so particular about what was put on the parlor door. About this time, I read a story entitled, "How Fritz Made a Skeleton," a story of Friedrich Blumenbach in *Young Folks* for 1870. It is not necessary to say that I was entirely in sympathy with Fritz.

About this time I would order from the butcher several animal heads, which my mother would boil until tender, after which I would prepare the skulls. In this way, I prepared the skulls of rabbits, as well as of several kinds of birds, including ducks, geese, hens, and pigeons. I had great ideas about getting the skull of a cat, but I never did, although I had read once that the skull of a cat was "very beautiful." One day I got from the fish-man the head of an halibut. My mother came into the kitchen and saw the enormous head. She said, "I didn't order that." "No, but your son did," said the fish-man. But this, as my first fish, showed me that all skulls were not as simple as those of mammals. Soon I began to dissect the heads, and began to study the brains and cranial nerves. We had long visits from one of my pseudo-aunts, "Aunt Helen." She came to the kitchen once and found me looking very sorry. When she asked me what was the matter, I replied, "I can't find the olfactory nerve."

Spurred on by the example of the Agassiz Museum near by, of which I had been especially fond since my aunt, Mrs. Skinner, first took me there, I attempted to make a museum of my own and put my bones and skulls into it. I first got a set of three orange boxes, and set them up on end, and this made two, or even three, shelves to each, and these I set up in a third storey room that my parents gave to me. Here, on the shelves of the orange boxes, I put what my friends gave me, and thus I collected many things, for the older people were amused at my tastes, and heard through my father about my Museum. One of my aunt's friends, "Aunt Sue" Newbold, had a human skull prepared for me for Christmas or my birthday, I have forgotten which, but it was when I was six years old. At the same time, I used to pray every night for a human skeleton, and when my father told a doctor friend of it, he gave me the skeleton of a seven months' embryo. I was pleased with it, of course, but I said to my father that I meant a full sized man's skeleton, and my father said

that as I was so little a boy my prayers were not yet strong enough, but that when I was bigger I would have one, and he was quite right! I also borrowed another skull from my friend Professor Horsford, who used to lend me books on Anatomy, and I used to come home, lugging all I could carry. My father once brought home a stuffed alligator sent me by his colleagues, the Eichbergs, one which was sent to them alive from Florida, and this added very much to my Museum. Hearing about a "manikin," I was very ambitious to make one out of cloth stuffed with cotton, but never got farther than the stomach, which I made of white cotton cloth and painted green with water colors. This lay about the house for a long time, but was never finished and remained in mute evidence of too great ambitions. I put into my Museum also the skeleton of a large hen, which I got by saving all the bones from the table, and adding a skull with some neck vertebrae. The yellow part of the feet my mother threw away, but I wept so that she had to get some others from the butcher, and these she boiled, so that I could prepare those and put them on. I had to have help in wiring these bones together, but when she put the leg bones on, she put them on wrong, and I had a discussion with her, after which she had to change them and put them right. Here also, in order to equip my Museum completely, I made a whole hen out of my familiar cloth, and stuffed this and sewed on feathers, and I prepared from an old black flounce a snake that was a bit too realistic for our lady friends, for, with shoe-button eyes and a red flannel tongue, it was somewhat startling and I had to keep it in a basket, so as not to frighten the ladies. To this collection, I naturally added a lot of things of ethnographical value; for instance, a large Indian bow with steel-headed arrow points, evidently collected by some Indian fighter, also a large Chinese umbrella, which I found that I could use when it rained, and used to carry about in Princeton. I wish that I had still the Indian arrows, for I could use them now to

illustrate my coming book on Culture History. I collected a lot of minerals, which I got when I went West with my father and mother, but these also are lost. I still have the fetal skeleton, and the human skull which was sent me by Aunt Sue Newbold, and these are both in Burton Hall, Smith College. I may have kept certain other pieces, probably the little alligator, very likely also in Burton Hall. When I went up to Princeton, I took my Museum, with its shelves of orange boxes, with me, where it was put in the attic to stay there until I left for my later life. I do not know what happened to it later on, but now the house is cleaned out entirely and it was probably thrown out long ago as rubbish!

While still in Cambridge, I did a little of what might now be considered "field-work." Our yard was filled with toads and I found several that had been cut with the lawn mower. These suggested to me the idea of doing it myself, and thus I chopped up one with my little iron hoe, but did not get a very good dissection. I came into the house, trembling and all but crying and told my mother what I had done. I quoted from one of my story books, "Jimmy Sliderlegs," "Much blood was there." I did not accomplish very much, so I buried the dead toad and later dug it up, finding what I afterwards knew as the coracoid and the scapula, besides some other bones. Later on, the sight of a dead animal would make me long to study its bones, and in that frame of mind I left Cambridge and went up to my grandfather's in the country at Princeton to live. Here, I met with a new environment, more butterflies than I had ever seen before. Great masses of fritillaries and Danais archippus hung from the clover blossoms, little Chrysophanus Americanus were on the rocks in our field, and I learned at a later date that Princeton was famous for butterflies. Later on, I began to find caterpillars and chrysalids and learned about their metamorphosis.

During the years I stayed in Princeton, from the age of eight to

sixteen, I learned much about the world, especially its Flora and Fauna. In this, I recall countless incidents and experiences in general education, which I could not get from books nor from conventional learning, but which advanced me along the line of a naturalist. These I will record as I recall them, and will begin with my find of two dead frogs, in a spring opposite Dr. West's. I insisted on dissecting them although it was not approved by my grandmother. My father gave me the permission, and I cut them open in the back yard. I will never forget finding grasshoppers in their stomachs, which was a genuine discovery of much importance to me and proved the wisdom of my father's idea to let me do what I wanted to; and now, as I think over the matter, it seems quite the right thing to do, although it was surprising, since he was a musician and not interested in the anatomy of frogs. I remember this as the first of many things in which my father showed his purpose of letting me shape my own life as I wanted, not urging me to be a musician. Later on, my knowledge of Amphibians was based upon a little pasture pond near the schoolhouse, filled with frogs, and with what I supposed to be the eggs. Some of them I took up to the house and put in a glass jar, but they turned out salamanders, so I saw that something was wrong there. I learned years afterwards that I had not found out the difference between the eggs of Rana, and the similar-looking ones of Amblystoma. It was about this time that, at a Sunday School picnic, when the other boys and girls played various sorts of games, I wandered off and looked along a little brook and saw what I then supposed to be a small fish with hands instead of fins! I brought it home as a great curiosity, but it soon escaped and made my grandmother fear that it had got into her pies. Long afterwards, I found out that the creature was a salamander larva, probably Eurycea, which my wife was to study in detail for many years, and this was my first knowledge of this animal.

This early experience with Amphibians was not very much, but my study of the common fly was much better, and involved some original research. For a long time, I had known that there were two sorts of flies about equal in number, which I believed were the two different sexes, but which were the males and which the females I did not know, neither could anyone be found who could tell me, for none of my mates even knew that there were two kinds of flies. The ones that had large round abdomens, and which pushed out a jointed tube when pressed with the fingers, were, I supposed, males and the tube I supposed to be a penis, but I soon found out that this sort pushed something that looked like eggs from it, and later, when I kept them these eggs became maggots, which proved to me that these round bodied ones were females, and not males, as I at first supposed. The later stages, the bringing up of the maggots, I did not do, but discovered them much later by finding the cask-shaped pupae in the stable manure by my grandfather's barn. The world had not then advanced enough to know that by screening the manure the house could be kept from so many flies, but my experiments were working towards that end, and if my grandmother, instead of giving me a cent for each twenty flies that I killed in her house, had given me more encouragement to investigate things which I wished to do, she would have saved her money, and would not have had so many flies!

In my Princeton life, however, my chief interest in the summer lay in butterflies and moths, technically, Lepidoptera. My first excitement along that line was in seeing the "Caraway worms" which I found in our back yard and garden. I saw at the same time the butterflies of Papilio asterias upon the clover blossoms, and later found out that they were different stages of the same insect. I collected the worms, fed them with caraway, and soon saw them making the chrysalids, which they attached by spinning a loop like a

hammock to hold them by. I am not quite sure that another species of butterfly was not the first, the "Milkweed butterfly," which I then knew as Danais archippus, getting that name from Harris's "Insects Injurious to Vegetation," which I used for years as my authority; but I used both species for raising, keeping them in cardboard boxes covered with mosquito netting. If I got a large number of caterpillars of about the same age, I could, by watching the brood intently at certain critical times, as, for instance, when they were forming the chrysalids, when these were hatching and so on, see all these events take place; and when the chrysalids were near hatching, I could see the parts develop, especially the color of the wings. All these were better to watch with the Danais, since the integument of the chrysalis was thinner and more transparent. These two butterflies were the first I learned how to raise, but from these I learned about many others. I learned that certain species were rather rare as butterflies, but, owing to their peculiarity of always using some especial species of food-plant, I could easily find a lot of the larvae, and raise them. Thus I found a queer worm on a certain unusual form of plant, or one that employed a certain kind of web or method of folding the leaves, and by learning this method I could collect a large number of rather rare butterflies. Among these, I remember well Vanessa milberti, Melitaea phaeton, Cynthia cardui, and C. hunteri, besides many others. On the other hand, I never found the larvae of certain very common butterflies, for instance, the common fritillaries, the common yellow butterfly, and the little American copper. I read in Harris that the fritillaries fed on violets, the yellow on clover, and the American copper on sorrel, but that did not help very much. On the other hand, the Grimes boys and I made several discoveries not in Harris, as that the Dryocampa imperialis fed on pine, which led the Grimeses to collect some two hundred one year. We also learned that certain species might be rare

one year and very common the next, and we would collect a large number usually rare, on a year when they were common, put them away in papers, and use them to make advantageous exchanges the next. The Quaker butterflies were especially exasperating, for although the butterflies were very common, we could never find the larvae. At about this age, I would search every pleasant day and carry the larvae home in my hat, and I used to try to get so accustomed to them as not to change a muscle of my face when they tickled, as they were always doing. Once my mother was entertaining a guest in the parlor, when I came in with my hat on, protecting some caterpillars. My mother asked me to remove my hat, which I did so quickly that the caterpillars were spread all over the room, to the astonishment of my mother's guest.

For my caterpillar work, I got for the smaller ones cardboard boxes, and for the larger ones, especially those that used earth to pupate in, as, for instance the Sphingidae, wooden scythe-boxes. All of these I got at Gregory's store for a very few cents, and arranged them at home. The boxes of cardboard I made ready for caterpillars by cutting a hole in the center of the cover, so that there was little else but the edge, and then I would cover the box with mosquito-netting, and then put the cover over this. The wooden scythe-boxes I would equip with a frame of laths, and tack on the mosquito-netting, or better, use wire-netting here. Smaller wooden boxes I made to serve by putting glass plates over them, and holding this on with a stone. I remember that I would occasionally give Jack, the pet crow, a large tomato worm, which he liked, and when he saw some in such a box he would try to get in by striking through the glass, and then, when he found that this didn't work, would pull at the glass and try to drag it off. When he saw that this was too hard work, he would fly up to the fence, and look over the whole until he saw the stone, and would then light on the box, push the stone away,

and pull off the glass with ease. I let him take a worm several times to pay him for his cleverness. I kept my caterpillars under the apple trees in the yard, where they would get rained on, but that didn't hurt them. The worst trouble came from the wind, and I well remember that once, after a high wind, my grandfather came to me and announced that I was ruined, because my cardboard boxes had sailed away and tipped over, losing the caterpillars. Whenever I think of Princeton, I think of certain environments where I would find certain species of Lepidoptera, and I remember especially the day when I found seventeen cocoons of the Cecropia. This was about the time I collected the large cocoons of the Saturniadae, and then learned that it was not necessary to stop Lepidoptera work in the fall, but that I could continue all winter, when the leaves were off the trees. This greatly increased my opportunities for study, and Princeton became a real University for me. In this interest I reached my highest point when I exchanged cocoons with M. Alfred Wailly in England. I first saw an article by him in *The Scientific American,* and was much excited about it, for it told about the very things that I had been at work upon, which I didn't know that anyone else cared about. Uncle Dan suggested that I write to him, and I did; thus the correspondence began. Once he sent me some cocoons of the Attacus pernyi, from North China, from larvae raised in Spain the preceding year. From these I got one mating and one hundred and twenty fertile eggs, which I raised on our native oak and got forty-five cocoons. My friend, Mr. Howe, lent me the use of an upstairs room in his house for this purpose. I remember once that Mr. Howe's young son, Allen, came up with me when I went there to feed them, and we found the leaves all eaten up and the great caterpillars crawling over the floor. I cleared a place large enough for the boy to sit on and sat him down while I went for some more branches of oak. He promised to stay there, and when I came back I found

the poor boy watching a big worm crawling on his collar, and just reaching up to his face. This was a good case of Casabianca, who obeyed his father to the death.

My forty-five pernyi cocoons hatched in September and thus I lost the whole brood, as Princeton, Massachusetts, was too cold a climate.

Although butterflies gave me a fine side-issue, still I held my taste for Anatomy. I would walk over the fields, especially where the farmer had been fertilizing the soil, and find pieces of bones, those of domestic birds and mammals, and determine them as well as I could, distinguishing the rights and the lefts. Occasionally, I would find a whole animal, often a woodchuck, and would collect these bones and, after I took them home, would assort the whole skeleton. At one time I found the body of a much decayed skunk in a field and collected the bones, and I wondered how my grandmother knew it. I can well remember how my grandmother laughed. She said, when I came in, "Well, Hal, you've done it now." My suit was hung out in the back yard for a week where the strong Princeton wind could blow through it, but the skunk's bones were very fine. Grandmother was somewhat suspicious of me after I dissected a snake in front of her window, after which for some time she used to come to the door after I had come in and carefully wipe the latch with a damp cloth. As she was very lame, it caused her some trouble to do this. My mother helped me in boiling what animals I got, but in this had to avoid my grandmother's prejudices. During these years, I collected what bones I could, and put them in an old-fashioned wooden sink which I kept in the kitchen. I put it under the back stairs, and arranged a wooden hook which kept the cover up when in use, and in this I kept small bones; but big bones, like those of Dr. West's horse, I kept in "the old cellar-hole," below the barn, where there had been one of my grandfather's houses that had

been moved off to serve as the printing office of Mr. Heywood, the office of *The Word,* a free-love paper, published in Princeton. In this house, there had lived and died my great-grandmother, who had had her say about naming me and whom earlier I used to go and see. She had become bent with rheumatism, and when I first read Whittier's "Barbara Frietchie," who was "Bowed with her four-score years and ten," I rather thought that Whittier had written about my great-grandmother. This "old cellar-hole" was my laboratory for years, and I cannot help envying the young people nowadays who have so much better laboratories. But thus I learned about bones.

In my collection of bones, I was greatly aided by the town doctor, Dr. West. He had had an old black horse named Thomas, which he spoke of to me as "Thomas Equinas." Thomas died, and afterwards Dr. West took me over to his grave and dug him up, thus furnishing me with a complete set of horse bones. A little later I chanced to go up over the hill where was the old burying ground. There were four old tombs there, and I found the door of one open, with a few bones scattered along the floor. It was a quiet place and there was no one to see me enter, and I had an interesting experience looking around among the bones of the old Princeton inhabitants. I asked my mother if I could go there and borrow a few bones at a time, as one does the books in a public library. I said I could mark the exact location of each bone and return it to the same spot. As I remember, my mother wouldn't let me get them, but my cousin, Marguerite, remembers that I took her up to the old tomb, and made her spread her apron and put in it a lot of the bones to bring home. Whether my cousin has remembered right or not I cannot tell, but I well remember going up to the old tomb quite frequently alone to study the old bones, and I remember particularly cervical vertebrae, showing the vertebrarterial foramina. This I knew from an Anatomy I borrowed from Dr. West. I think it was Wilson's Anatomy, now

long superseded by Gray, which had far better pictures, and which I got for myself when in Amherst College. Still later I was to get acquainted with the German book, Gegenbaur, and still later with Quain, Gerrish, Piersol, and others; and while in Athens, I got Sclavounos in Greek, thus eventually becoming acquainted with the standard anatomical literature of the world, basing my interest upon Frederick Hollick. It was about this time that my friend, the Rev. Mr. Howe, got a second-hand set of Rees's Encyclopedia, and from this I found that the muscles of the body had names in Latin, and that they were described by giving the name and the origin and insertion of each, all in Latin. Never before had I found anything that took the place of Calvin Cutter, for I had long known that this book did not satisfy one with regard to the muscles, and did not even give the names of all of them, but here was what seemed to me a complete description of them all. I at once bought at Gregory's store a lot of purple covered note-books decorated with birds, and began copying them. This took many weeks, but at last I got what then I thought were all the muscles of man, although there must be other muscles in other animals, the cat, for example. Later, when I went to Worcester to school, I found Mivart's "Cat," with such good illustrations that I could find the names of many of them also. I borrowed from Dr. West, Wilson's "Human Anatomy," and soon began dissecting. I had to keep the cat material from my grandmother, but I had a fine ally in my good mother, who was herself the daughter of a physician, and thought that I would be a physician, too, and understood me in part.

Once, when my mother was entertaining a caller, she glanced under the desk, and saw the paws of a cat projecting from beneath it. At about this time, too, I dissected the feet of birds, especially hens, and studied the tendons, which I could pull and see what they did. I had no book to get the names of these from, but named them after

the example of human muscles, and thus got the flexors, extensors, and other things. These I also drew carefully and even mimeographed them with a gelatin pad which Mr. Howe taught me how to make. I wrote in the names on these diagrams, but do not remember why I wanted to manifold them. It seems as if I had the idea of publishing my important discoveries. I remember that I had the foot tendons of hens and pigeons, but do not think that I ever did anything else along this line. After I came to Amherst, I continued dissecting cats, but owing to lack of books I did it much like original work, thinking that I was getting important results. Amherst was then as now mainly classical, and thus I became much interested in philology through the influence of Elwell, with whom I took Sanskrit, but at the beginning of my Junior year I was allowed to take several sciences, and in this way I became acquainted with the world. Of course, first and foremost, I met John Tyler or "Tip," as he was called, who awakened my interest in Invertebrates. One summer, there were nine of us who went with him to Mt. Desert Island dredging. We used then for a laboratory a paint-shop, and the local fishermen used to watch us and ask many questions as to what we were doing. My friend, Ralph Seelye, said, in reply to a very exacting question, "Sir, we are trying to find out how the world was made." We had then no Biological Laboratory at Amherst, but used for the purpose the old Barrett Gymnasium, where there were two rooms in which we could dissect if we could find the animals. Professor Tyler took us out to find turtles, and to catch fish and, most wonderful day of all, he sent for some "mud-puppies" (Necturus).

In my Senior year at College, after we had dissected frogs, I brought some mud-puppies down to the old D. U. House, where I took a large basement room, and fitted it up as a laboratory. There I dissected the muscles, while my friend, Fred Peck, dissected the circulatory system. We got the professors down to see what we

were doing. I was taking the work officially with "Old Doc" Hitchcock, and officially he gave me my marks. Professor John Tyler could tell the Trustees that two students prepared privately a better laboratory than the College could furnish them, and this fact may have led them to the building of one above the one in Appleton Cabinet, and eventually to the present fine combination of Geological and Biological Buildings. I kept my pictures and notes of Necturus muscles, and these I completed in after years and published as the limb muscles of Necturus, in Professor Spengel's Festschrift. He wrote and thanked me, but asked me why I had done this, as he did not remember what I had done with him. Then I had the opportunity to write him and say that I had always been grateful to him for publishing my Doctor's thesis in the *Zoölogische Jahrbücher,* for I could not have published it at all otherwise. Thus I was able to thank Professor Spengel, and at the same time finish up the muscles of a part of Necturus.

At Amherst, I found Alexander Ecker's "Anatomie des Frosches" with the separate muscles described, and it was this that led me to go over to Freiburg, when I had enough money. I took my mother over with me. I found, however, that Professor Ecker was dead, but that he was succeeded by Professor Robert Wiedersheim, who had got out a new edition of the book, and gave a course of lectures on "Vergleichende Anatomie." I found out about this and wrote a German letter to Professor Wiedersheim, which he afterwards called the most curious letter he had ever received. He replied to it, stating that he could give me Vergleichende Anatomie, and in case I was advanced enough, he would take me into his private laboratory, and that Professor August Weismann, "der grösste Zoölog unserer Zeit" was also in Freiburg, and I would have a chance to study with him also. This letter brought me to Freiburg, where I took my Doctor's degree with Weismann, but studied mainly with Wiedersheim,

and took Human Anatomy with him also. With this, as a Ph.D. and Assistant to Professor Wiedersheim, I bring to an end the sketch of my "Jugenderinnerungen."

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